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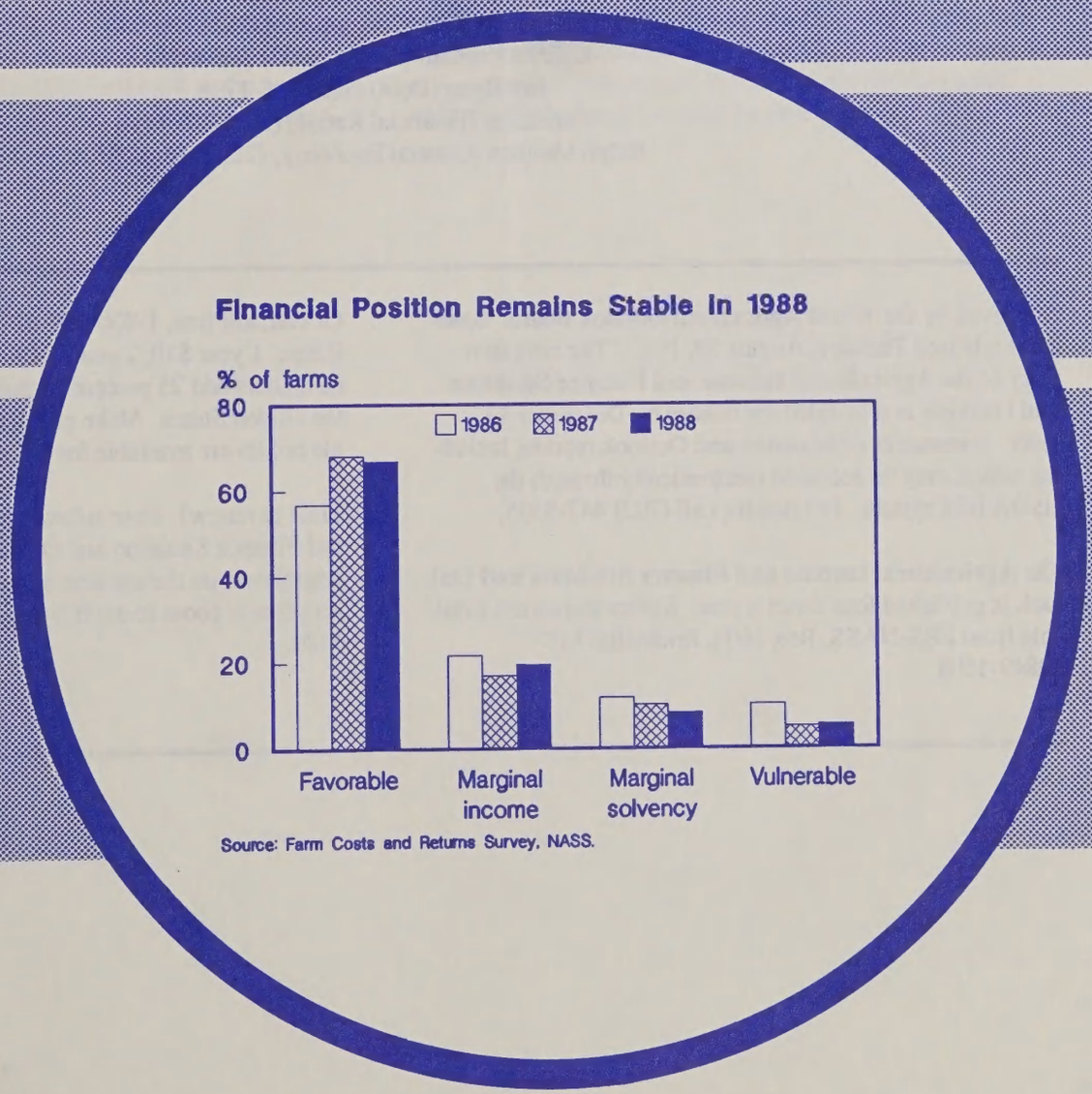
Situation and Outlook Report



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Summary

Expected increases in crop and meat production, leading to some buildup in inventories, could push net farm income over 10 percent to between $48 and $53 billion this year. Cash receipts are expected to rise from $2 to $10 billion and more than offset a decline in direct Government payments. Total expenses could increase 3 to 6 percent. However, the increase in gross income exceeds the rise in expenses by a large enough margin to push net farm income above the 1987 record of $47 billion. Net cash income, which does not include inventories, could fall from last year's record $60 billion.

Wheat and corn receipts are expected to rise as much as 15 percent this year, following sizeable gains last year. Vegetable receipts are also expected to rise. Soybeans, however, will probably see falling receipts as higher domestic production and record foreign output lead to a 25-percent decrease in prices.

Total livestock and poultry receipts should see a modest rise, but hogs could be the only livestock group facing a drop. The drop will be small (less than $500 million) but will be on top of a $1-billion drop last year.

Cash expenses should rise by 3 to 6 percent in 1989, about the same as last year. A third of the expected gain is accounted for by expense items directly related to the increase in the number of acres planted. Short-term interest expenses are rising because of increased input use and higher annual interest rates. Long-term interest expenses are continuing to fall as old debt is being retired and long-term rates decline. Total interest expenses are forecast to rise by over 10 percent.

The farm sector balance sheet shows continuing improvement in U.S. agriculture's financial position. Farm asset values should rise 4 to 6 percent this year, averaging $780 to $790 billion. Rising real estate values are driving this increase. Debt levels will probably be unchanged from last year. Debt movements in 1989 will be heavily influenced by implementation of the Agricultural Credit Act of 1987 and by FmHA working through its problem loan portfolio. Equity in the sector could rise 5 to 7 percent, the third straight year of improvement, and reach $643 to $653 billion.

Results from the 1988 Farm Costs and Returns Survey are in and show that there was little overall change in the financial characteristics of U.S. farms between 1987 and 1988. On average, farm profits were higher, but fewer farms were profitable. Survey responses this year indicate that firms contracting for both crop and livestock production are major players in U.S. agriculture. Contractors receive about 10 percent of gross farm income and pay about 5 percent of total expenses. Forty-eight percent of the farm and ranch operators said they had no outstanding liabilities, an improvement of 4 percentage points over 1987. The ending debt/asset ratio was 0.13, down from 0.15 a year earlier.

Glossary Of Terms In Farm Income And Finance

Net cash income—is the difference between cash receipts, farm related income, and direct Government payments and cash expenses. This cash-based concept measures the total income farmers receive in a given year, regardless of the year in which the marketed output was produced. It indicates the availability of funds to cover cash operating costs, finance capital investments and savings, service debts, maintain living standards, and pay taxes.

Net farm income—is the difference between gross farm income and total expenses. This accrual-based concept measures the profit or loss associated with a given year's production. Additions to inventories are treated as income. Nonmoney items such as depreciation, the consumption of farm-grown food, and the net imputed rental value of operator dwellings are included.

Net cash flow—is the sum of: gross cash income, the change in loans outstanding, net rent to nonoperator landlords, and the net change in farmers' currency and demand deposits; minus gross cash expenses and gross capital expenditures. This financial indicator measures cash available to farm operators and landlords in a given year. It indicates the ability to meet current obligations and provide for family living expenses, and to undertake investments.

Debt/asset ratio—measures both proportional owner equity in the farm and the financial risk exposure of the operation (the extent to which the farm's assets have been borrowed against). It is calculated as total debt outstanding as of January 1, divided by the farmer's estimate of the current market value of owned assets of the farm business.

Equity level—measures net worth. It is the hypothetical balance that would remain from the sale of assets and paying off existing debt. It is calculated as total operator assets minus operator debt outstanding.

Current and inflation-adjusted dollars—In this report, dollar values of income, expense, asset, and debt items, unadjusted for the effects of inflation, are referred to as current or nominal dollars. Current or nominal figures, which indicate the purchasing power prevailing in the cited year, do not allow for fully accurate comparisons across time. To allow for meaningful comparisons across time, adjustments for the effects of inflation are made. Adjusted figures use a 1982 base and are interchangeably referred to as real, constant dollar, or inflation-adjusted.

Farm Income

Higher Production and Rebuilt Stocks Maintain Income

Expected increases in crop and meat production should push net farm income to $48 to $53 billion this year, while net cash income could fall from the 1988 record. A 4-percent ($6 billion) increase in cash receipts is expected to more than offset a 25-percent ($4 billion) decline in direct Government payments. More crop production could also raise calendar year-end inventories and contribute to the 5- to 8-percent gain in gross farm income over last year.

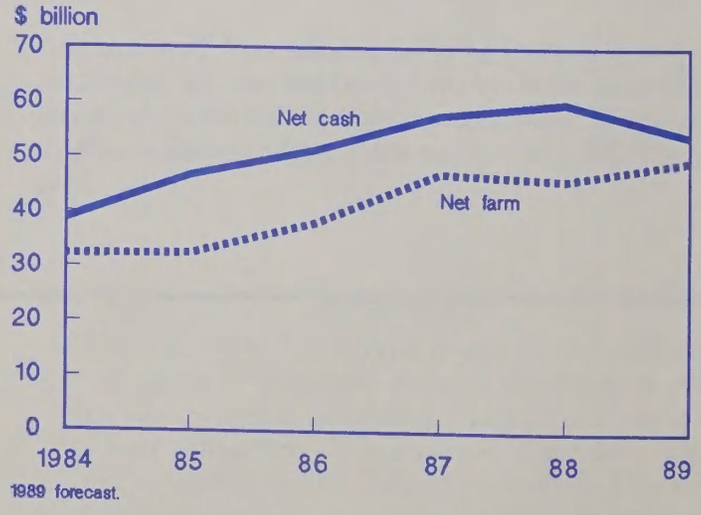
The increase in planted acres and relatively high feed costs will likely lead to a 3- to 6-percent increase in total farm production expenses. However, the $9- to $14-billion increase in gross income exceeds the projected $4- to $8-billion increase in total expenses by a large enough margin to push net farm income above the 1987 record of $47 billion.

Net cash income could fall as much as 13 percent. Gross cash income will increase less than gross farm income because higher year-end inventories do not affect cash income. Increases in cash expenses are expected to be larger than gains in cash income.

Record Receipts in 1989

Both crop and livestock receipts are expected to exceed previous record levels. With the projected 3- to 8-percent increase this year, crop receipts could be 17 to 23 percent above 1986 and 1987, and as much as 6 percent ($5 billion) above the 1985 record. Livestock receipts are expected to rise for the fourth consecutive year, and approach $80 billion, with poultry showing the largest absolute and relative gains in cash receipts.

Figure 1
Farm Income



Wheat, Corn, and Vegetable Receipts Up, Soybeans Down

Both wheat and corn receipts are expected to rise as much as $1 billion this year, following sizeable gains in 1988. Wheat and corn receipts could account for half of the increase in crop receipts. Vegetables account for 10 to 15 percent of all crop receipts. The $1-billion increase in vegetable receipts is about 30 percent of the total gain projected for crop cash receipts.

Wheat receipts are being buoyed by strong demand in the face of low stocks. Although acreage reduction program (ARP) requirements were reduced to 10 percent of base (from 27.5 percent), increased planted acres of wheat will not increase supply as much as initially forecast because of damage to the winter wheat crop. Even with a winter wheat crop as much as 20 percent below last year's level, total wheat production could be up 17 percent from 1988. However, more wheat is not expected to weaken prices. Wheat stocks at the beginning of the 1989/90 crop year were only 28 percent of total projected use and are expected to fall to 23 percent by the end of the crop year, compared with an average of 65 percent for 1983-1987.

Even with the relatively large $1-billion increase, corn receipts would still be more than $5 billion below the 1985 level. Lower prices are expected in response to large production gains. However, the price decline is expected to be moderate because stocks are low relative to recent years, even though corn supplies are not nearly as tight as wheat supplies. Ending stocks for the 1989 corn crop are expected to be roughly half of the 1985 to 1987 average while use is expected to be slightly above the average for the same 3 years.

The projected 13-percent increase in vegetable receipts is driven by reduced yields expected for dry edible beans, potatoes, and fresh vegetables. Last year's drought-reduced supplies of many commodities and adverse weather this year — too wet in some areas, too dry in others — are expected to keep upward pressure on vegetable prices.

Soybean receipts may slip slightly, following a 25-percent gain in 1988. Increased production and reduced exports could raise 1989/90 ending stocks to double the unusually low 1988/89 levels. Record foreign output and higher domestic production could lead to a 25-percent decline in the 1989/90 season-average price.

Poultry Receipts Gain, Hog Receipts Down

Total livestock and poultry receipts are expected to rise modestly. After 3 years of growth, cattle and calf receipts are likely to remain at their 1988 level as cattle producers begin to build their herds. Poultry receipts, on the other hand, are expected to rise 6 percent, over $2 billion above their 1987 level and over 50 percent above just 10 years ago. Fueled by continued strong consumer demand, farm prices for both turkeys and broilers are increasing this year even though production is also expected to rise.

Hogs are the only livestock group facing a decline in receipts. This decline could be less than $500 million but would be on top of a decrease of over $1 billion last year. Feed costs may remain relatively high this year and high hog slaughter rates are keeping hog prices down. However, pork production is increasing much less than last year's 9 percent.

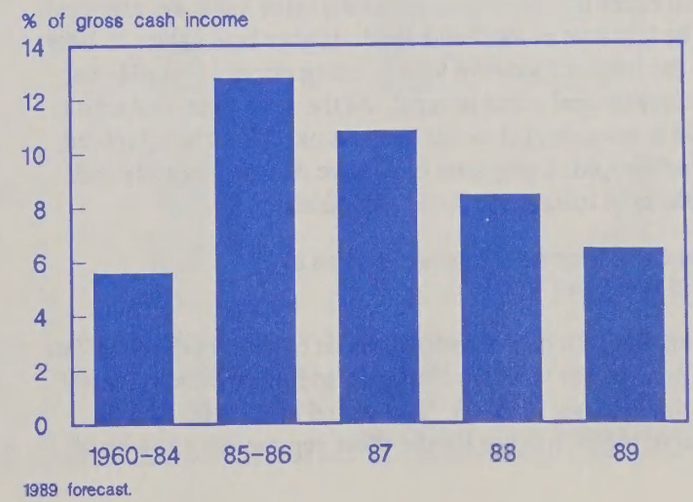
Government Payments Down

Total direct Government payments could fall by as much as a quarter from last year's $14.5 billion. This decline can be attributed largely to last year's drought as relatively high prices for feed and food grains combined with lower target prices to reduce deficiency payments disbursed in 1989. For wheat, the season-average price received by farmers on the 1989 crop could equal the target price. This compares with the 1984/85 - 1987/88 period when season-average prices received by farmers were all $1.00 or more lower than the target price.

For corn and sorghum, most of the decline in deficiency payments during 1989 can be traced directly to the relatively high prices during the last part of 1988. Deficiency payments are disbursed three times throughout the crop year: at program sign-up at the start of the crop year, after the first 5 months of the marketing year, and at the end of the marketing year. For the 1988 corn and sorghum crops, the payment after the first 5 months was due in the first quarter of this year and was much lower than in previous years because of high prices throughout the fall of 1988.

In contrast to the projection for much lower deficiency payments under the wheat, corn, and sorghum programs, cotton and rice deficiency payments are expected to be higher in

Figure 2
Government Payments Declining



1989 forecast.

1989 than last year. As with corn and sorghum, a large portion of the calendar 1989 deficiency payments for cotton and rice is for the 1988 crop. For both crops, prices weakened towards the end of 1988 so the deficiency payments in the early part of this year were higher than in 1988.

Mitigating the effects of lower wheat, corn, and sorghum payments in 1989 are an expected increase in Conservation Reserve Program rental payments and approximately $2.3 billion in disaster payments made under the 1988 Disaster Assistance Act. Because of uncertainty regarding details of any disaster relief this year, no related payments have been considered in the current forecast.

Expenses

Cash expenses are projected to rise 4 to 7 percent in 1989, nearly the same rate as last year. In 1988, feed costs rose over $4 billion, accounting for half of the total increase in cash expenses. Feed expense could grow more than $1 billion in 1989, contributing as much as 25 percent of the $4- to $8-billion gain in total cash expense. In contrast, a third of the expected increase in 1989 is accounted for by expense items directly related to the increase in the number of acres planted: seed, fertilizer, fuels and oils, and chemicals.

Planting more acres will increase fuel and oil use, as will harvesting and hauling more grain. Higher fuel prices also contribute to the rise in fuel and oil expenses. Crude oil prices rose over a third between the beginning of January and the middle of April. Further increases in crude oil prices this year should have little effect on fertilizer and chemical expenses because the bulk of these expenses takes place early in the year.

Total interest expenses could rise by over 10 percent as short-term interest expenses rise and long-term interest expenses fall for the second consecutive year. Short-term interest expenses should rise because of the relatively large increase in planted acres and more borrowing for machinery and equipment purchases. Higher annual average rates also contribute to increased short-term interest expense.

Real estate interest expenses, on the other hand, are expected to be less than in 1987 and 1988. Higher land values in 1989 — the third consecutive year of rising prices — would tend to increase real estate interest. At the same time, real estate debt is not expected to rise because old debt is being retired or refinanced. Long-term rates have declined recently and some farm loans carried rate reductions.

Net Cash Income Expected to Rise in Northeast and West

Even though total net cash income is expected to decline 7 to 13 percent this year, the Northeast and the West may record slight increases (table 1). This would be the fifth straight year of higher income for the West, representing growth of

Figure 3
Prices Paid and Received by Farmers

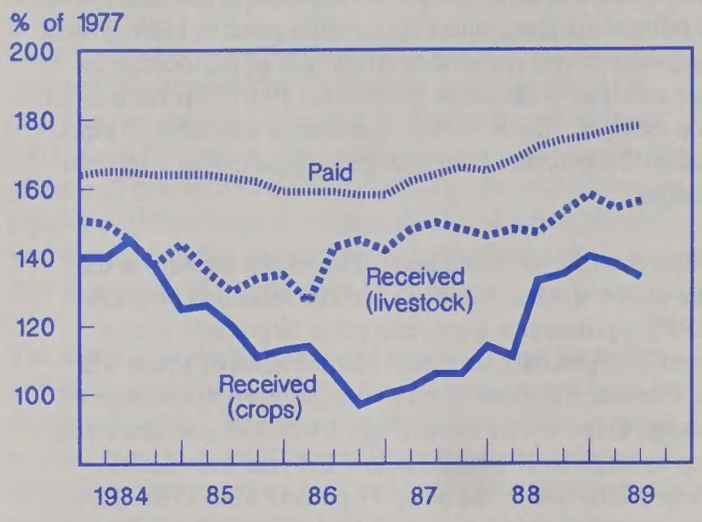


Figure 4
Prices Paid for Major Production Inputs

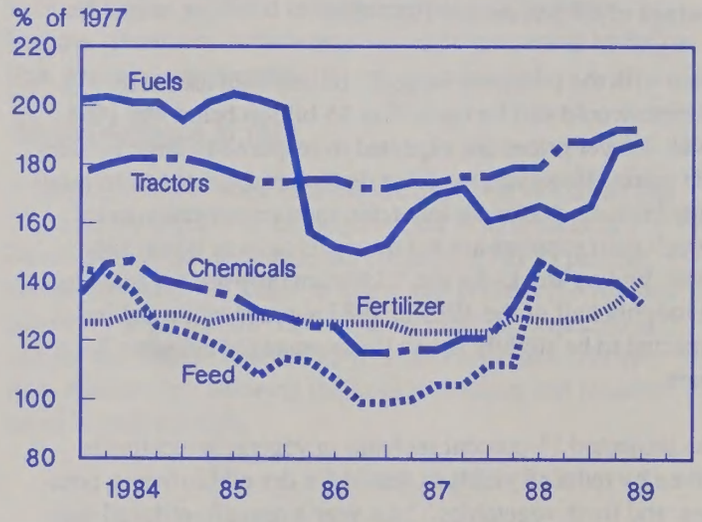
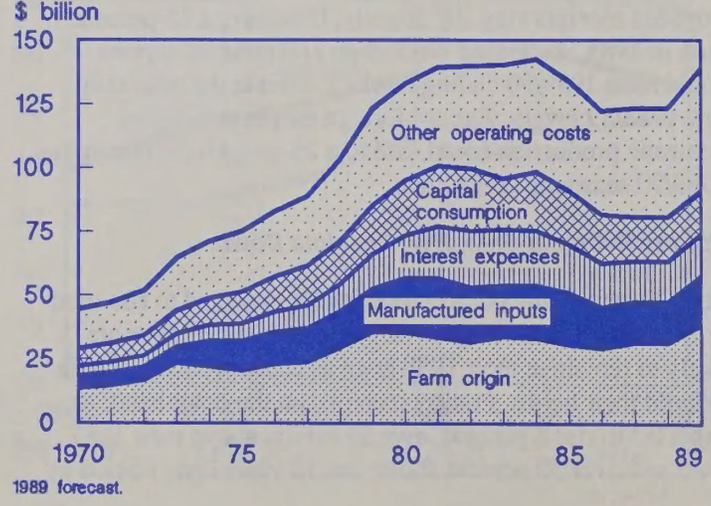


Figure 5
Farm Production Expenses



1989 forecast.

over 50 percent since 1984. In contrast, the projected $3-billion decline in net cash income for States in the Midwest accounts for three quarters of the total U.S. decline. This decline in the Midwest reflects lower Government payments and a $4-billion increase in cash expenses. Even with the forecast fall of nearly 13 percent, net cash income in the Midwest would be about 50 percent higher than in 1984 and only 8 percent below the 1985-1988 average. The Southeast and the South Central regions are also expected to experience lower net cash income this year but less of a decline than in the Midwest.

Crop Receipts Up in All Regions

Crop and livestock receipts are expected to rise in all regions. The largest increase in crop receipts is likely to be in the Midwest, 13 percent, with the Southeast and Northeast up by 7 to 8 percent. The South Central States are expected to exhibit the smallest increase in crop receipts, 3 percent.

Growth in the Midwest can be attributed to large, 10 to 15 percent, increases in both wheat and corn returns. Total wheat receipts, with the Midwest accounting for more than half, are expected to rise 16 percent. The total rise in corn receipts is expected to be slightly smaller than for wheat but the Midwest accounts for a much larger share so the region's gain will be proportionately higher. Crop receipt strength in the Southeast is more diverse. Tobacco and vegetables, accounting for over a third of the Southeast's crop receipts, are expected to rise nearly 20 percent.

The most important factors in the crop receipt picture for the South Central region are the projected decline in rice and the relatively small increase in cotton, the area's two most important crops. Together, cotton and food grains, of which rice is the dominant crop, comprise over half of the region's crop receipts and are expected to grow only 2 percent this year.

Figure 6
U.S. Regions

Less Variation Across Regions for Livestock Receipts

Increases in livestock receipts are expected to be more uniform across regions and more moderate than the rise for crops. Livestock receipts in the Northeast may rise more than 5 percent. Dairy accounts for over half of the region's livestock receipts and may grow nearly 5 percent. Poultry, accounting for an additional 24 percent of the region's livestock receipts, is projected to increase over 5 percent.

Livestock receipts in the South Central and West are expected to rise 2 percent or less this year, following gains of approximately 9 percent in 1988. States in the Midwest, on the other hand, are likely to see a small increase in livestock receipts, possibly 3 percent, while States in the South-

Table 1--Income components by region

	Cash receipts		Government payments	Cash expenses	Gross cash income	Net cash income
	Crops	Livestock				
			Billion dollars			
1987						
Northeast	3.5	6.4	0.3	6.4	10.5	4.1
Midwest	23.4	33.5	10.5	45.5	69.6	24.1
Southeast	10.8	11.1	1.2	14.3	24.1	9.8
South Central	6.7	11.8	2.7	15.0	22.3	7.3
West	19.3	12.9	2.1	23.1	35.4	12.3
U.S. Total	63.8	75.7	16.7	104.3	162.0	57.7
1988						
Northeast	3.7	6.5	0.2	6.7	10.7	4.0
Midwest	26.9	33.9	9.4	48.3	72.3	24.0
Southeast	12.1	11.6	0.9	15.3	25.7	10.4
South Central	9.1	12.8	2.2	16.4	25.2	8.8
West	20.7	14.1	1.7	25.0	37.7	12.7
U.S. Total	72.6	78.9	14.5	111.7	171.6	59.9
1989F						
Northeast	4.0	7.0	0.2	7.5	11.6	4.1
Midwest	30.4	35.0	5.4	52.0	72.9	20.9
Southeast	13.1	11.5	0.8	17.0	26.4	9.4
South Central	8.6	13.0	2.8	17.0	25.4	8.4
West	21.6	14.2	1.6	25.7	38.5	12.8
U.S. Total	75 to 79	78 to 82	9 to 12	116 to 120	170 to 175	52 to 57

F = Forecast.

east are not expected to record any growth in these receipts. One reason for this disparity in growth rates is the fact that hogs are relatively more important in the Midwest and the Southeast than in the other regions. Hogs, the only livestock for which a decline in total receipts is forecast, accounts for over 20 percent of livestock receipts in the Midwest and over 10 percent in the Southeast but less then 5 percent in the West and South Central regions.

Government Payments Down Unevenly Across Regions

The decline in Government payments is one of the more notable aspects of the income picture in 1989. Total direct payments are expected to drop by over a quarter from 1988 but, more than any of the other major income components, the distribution across regions is uneven. Ten- to 15-percent declines in direct payments are expected for States in the Northeast and Southeast while the decline for the West is likely to be less than 10 percent. The Midwest is likely to experience a decline of over 40 percent in direct payments as deficiency payments for feed grains and wheat drop by two-thirds and nearly half, respectively, during 1989. Direct payments to producers in the South Central region could rise over 20 percent because payments to cotton and rice producers are expected to increase. Because this region accounts for over half of all cotton receipts and over two-thirds of all rice receipts, payments during 1989 under these two programs are expected to be substantially higher than last year.

Expenses Up Evenly

The increase in cash expenses is expected to be similar across regions. The largest increase, over 10 percent, may occur in the Midwest because planted acres increased more there than elsewhere. The increases in the Northeast and the West are expected to be small, less than 3 percent, whereas States in the Southeast and South Central regions are likely to see expenses up 4 to 8 percent. This uniformity is due largely to the fact that increases for all major expense items are projected. For the Northeast, Midwest, and South Central regions, the projected 8 percent growth of feed expenses is important because of major livestock production. Similarly, expenses are up in the Southeast and West — the two regions in which crop receipts exceed livestock receipts — because of increases of over 10 percent for fertilizer, fuels, and other expenses associated with crop production.

Type of Farm Adds Perspective

Aggregate income and expense estimates for the farm sector do not fully reflect conditions of different types of farms. Although most farms produce more than one commodity, farms are becoming more specialized. A single commodity or group of commodities accounts for at least half of total sales on a majority of farms. Grouping farms according to the commodities providing most of the operation's cash receipts provides a more meaningful picture of the farm situation. Estimates and forecasts for specific farm types are more sensitive to modifications of production and price data than farm-sector totals. Specialization implies that a single commodity or input can have more impact on farms grouped by similar enterprises.

There are fewer crop farms than livestock farms according to the 1988 Farm Costs and Returns Survey (FCRS). Livestock

Definition of Farm Types

Farms were classified into types according to the commodity or group of commodities that accounted for at least half of crop and livestock receipts (market sales of crops and livestock plus CCC loans). For example, cash grain farms had at least 50 percent of receipts from wheat and other food grains, corn and other feed grains, and soybeans and other oil crops. Sales of a single cash grain did not necessarily account for half of total commodity receipts. This classification system corresponds to the Standard Industrial Classification (SIC) system used by the U.S. Department of Commerce.

Farm Type	SIC code	At least half of receipts from:
Cash grain	11	Wheat, rice, corn, sorghum, soybeans, sunflowers, and other cash grains
Cotton	131	Cotton
Tobacco	132	Tobacco
Fruit-vegetables	134, 16, 17	Potatoes, and other vegetables, fruits, and treenuts
Nursery-greenhouse	18	Ornamental, and nursery products
Other crops	19	Crops, but not in above categories
Red meat	21	Cattle, calves, hogs, and sheep
Dairy	24	Milk and other dairy products
Poultry and eggs	25	Broilers, other chickens, eggs, and turkeys
Other livestock	29	Livestock, but not in above categories

Table 2--Specialized farms' proportions of cash receipts 1/

Commodity	Farm type						
	Cash grain	Cotton	Tobacco	Fruit-veg	Red meat	Poultry	Dairy
	Percent						
Feed grains	80	1	1	1	10	*	2
Food grains	74	2	*	1	14	*	2
Oil crops	76	2	*	*	15	*	2
Cotton	10	78	*	1	3	0	*
Tobacco	4	0	78	1	7	0	4
Vegetables	5	*	1	77	1	0	2
Fruit	*	*	*	95	1	*	*
Beef	5	*	*	*	87	*	5
Pork	10	*	*	*	85	*	2
Sheep & lambs	5	*	0	*	91	*	*
Poultry & eggs	*	*	*	*	1	94	*
Milk	*	0	*	*	1	0	97

* = less than 0.5 percent. 1/ For example, cash grain farms account for 80 percent of all cash grain receipts, 74 percent of all food grain receipts, 76 percent of all oil crops receipts, etc.

farms are 63 percent of all farms and about 50 percent of all farms specialize in red meat production. Nearly 20 percent are cash grain farms, and with dairy (9 percent) and other crop (7 percent), these four types are the most numerous.

Some farm types are more specialized than others (table 2). Cash grain farms account for the bulk of grain and oil crop cash receipts but red meat farms also produce crops and receive 10 to 15 percent of cash grain receipts. Almost all fruit is sold by fruit-vegetable farms, but these farms sell less than 80 percent of all vegetables. Poultry and milk sales are almost exclusively from poultry and dairy operations.

Net cash income is expected to be lower in 1989 for crop and livestock farms (table 3). Crop farms could experience a small (2 to 3 percent) decline, while livestock farms' net cash income may fall about 14 percent. Cash expenses of livestock farms show a 7-percent gain (over $4 billion) that swamps the 1-percent ($1 billion) rise in gross cash income. Beef cash receipts should be stable in 1989 but hog receipts are expected to fall about 3 percent. Poultry and dairy receipts will be up 4-6 percent. Poultry is the only livestock farm showing higher net cash income in 1989 than 1988. Red meat and dairy net cash income drops sharply.

Table 3--Cash income and expenses by farm type, 1988-89F

Farm type	Gross cash income		Cash expenses		Net cash income	
	1988	1989F	1988	1989F	1988	1989F
	Billion dollars					
Cash grain	41.8	42.5	23.7	25.3	18.1	17.2
Cotton	5.4	5.4	3.2	3.4	2.3	2.0
Tobacco	2.4	2.9	1.9	2.0	.6	.9
Fruit-veg.	16.6	17.0	6.0	6.4	10.6	10.5
Other crops	8.1	8.3	6.7	7.2	1.3	1.1
Nursery	7.1	7.6	4.8	5.2	2.2	2.4
Total crops	81.4	83.7	46.3	49.5	35.1	34.2
Red meat	51.3	51.0	41.0	43.8	10.3	7.3
Poultry	13.0	13.7	1.3	1.4	11.7	12.3
Dairy	21.8	22.4	19.8	21.1	2.0	1.3
Other livestock	4.1	4.1	3.3	3.5	.8	.6
Total lvstk.	90.2	91.3	65.3	69.8	24.9	21.5

F = Forecast.

Crop farms' expenses should also rise 7 percent, but the 3-percent gain in gross cash income keeps net cash income from falling more than 3 percent. However, most of the decline is registered by cash grain farms. Cotton farms may not have lower income in 1989 if recent developments trigger higher prices and improved cash receipts than those currently forecast.

The higher production expense forecast for 1989 affects crop and livestock farms disproportionately. Cash grain farms account for about 24 percent of gross cash income and 21 percent of cash expenses. While red meat farms accumulate 30 percent of gross cash income, they register 37 percent of cash expenses. Nearly $3 billion of the $7.6-billion projected increase in sector expenditures accrues to red meat farms and $1.6 billion to cash grain farms. However, expense items showing the largest growth rates (over 10 percent) are inputs used more by crop than livestock enterprises, fertilizer, fuels, pesticides, storage, and transportation. These crop expenses could increase $2.6 billion in 1989. Feed costs may rise $1.6 billion (8 percent). In addition, livestock farms that produce crops are also affected by some of the increased crop production expense.

Reduction of direct Government payments will have the most effect on cash grain farms since they received over 50 percent of payments in 1988. However, livestock farms collect about 35 percent of total direct payments, with dairy farms accounting for 8 percent and red meat 26 percent. Direct payments will probably decline about $3.5 billion from 1988. If market prices of corn and wheat move up closer to their target prices as stocks decline throughout the 1989/90 crop year, then deficiency payments will be lower than current estimates.

Cash grain farms could have direct payments fall $2 billion in 1989 and another $1.3 billion could be the reduction of direct payments to livestock farms. Wheat and corn deficiency payments are projected to fall more than 60 percent during calendar 1989 from totals received in 1988. Cotton deficiency payments are expected to fall in 1989 because of strong world market prices, so the total direct payments

received by cotton farms may decline more than $200 million.

New Survey Shows 1988 Finances Stable

USDA's annual Farm Costs and Returns Survey (FCRS) of farm and ranch operators shows that there was little overall change in the financial characteristics of U.S. farms between 1987 and 1988:

- On average, farm profits were higher, but fewer farms were profitable.
- More farms had no outstanding liabilities and fewer had high debt compared with assets.
- Financial performance was relatively stable in 1988; the share of farms in either a favorable (67 percent) or vulnerable (5 percent) position was similar to that of 1987.
- Vulnerable farms, because of crop failure or marketing factors, were unable to generate sufficient income to cover all expenses, despite having similar levels of production expenses, debt, and assets with other farms with high debt.
- Vulnerable farms owed over $16 billion in operator debt, the largest share of which was owed to commercial banks.
- Firms contracting with growers and producers (particularly with broilers, hogs, and vegetables) are major players in U.S. agriculture. About 10 percent of gross farm income and 5 percent of total expenses belong to someone other than the farm operator.

The FCRS is a survey of farm and ranch operators and, therefore, measures the financial well-being of these operations. The financial indicators derived from the FCRS, however, do not fully represent the agricultural sector as measured in the official USDA income estimates presented in the appendix of this report. An example of exclusions is agricultural landlords who rent land to farm operators.

An operation's financial condition can be assessed by jointly considering the net income position (positive or negative) and the amount of debt relative to assets (above or below 0.40). Income can be measured on either a cash or net farm basis. Farms with positive net income and low debt are considered in a **favorable** financial position while those with negative income and low debt are considered in a **marginal income** position. Those with positive income and high debt are of **marginal solvency** and those with both negative income and high debt are **vulnerable**.

Net Incomes Rise Slightly But Fewer Operations Have Positive Incomes

Net farm income—Average net farm income (profits) rose in 1988, despite the drought. However, the percent of farm operations with positive incomes fell slightly from 1987. Fewer farms were profitable. Still, some 75 percent of farms represented in the FCRS were profitable in 1988 compared with 78 percent in 1987.

The largest drop in the share of farms with positive net farm income was for those with gross sales of $20,000-$39,999, operations in the Corn Belt and Southern Plains, and units specializing in the production of cash grains, nursery and greenhouse products, and poultry. The situation was more pronounced for operators with little or no reserves on hand. Livestock producers were hurt by higher feed costs. At the opposite extreme, producers managing to harvest crops or having large inventories benefited from higher market prices.

Average net farm income increased by about 1.5 percent to a level of $21,300. Higher earnings from crop and livestock sales raised gross farm income, despite lower direct Government payments, more loan redemptions from the CCC (treated as withdrawals from current income), and fewer net additions to crop and livestock inventories. Average expenses also increased but not enough to override the expansion in gross farm income.

Net cash income: Net cash income averaged $17,400 per farm operation, up $500 from 1987. More than half of all farms (53 percent) had positive net cash farm income in 1988, identical to 1986 but down 4 percentage points from 1987.

Table 4--Distribution of farm operators by financial position

Item	Favorable	Marginal income	Marginal solvency	Vulnerable
	Percent			
Net farm income:				
1988	66.9	19.5	8.3	5.3
1987	68.1	16.9	10.1	4.9
1986	56.8	21.6	11.7	10.0
Net cash farm income:				
1988	46.0	40.4	6.8	6.8
1987	48.5	36.5	8.2	6.8
1986	41.0	37.0	11.7	9.9
1985	40.4	38.3	11.3	10.0
1984	40.8	40.1	9.2	9.9
Net income considering all sources of income and expenses: 1/				
1988	49.1	37.3	6.6	7.0
1987	51.7	33.4	8.1	6.8
1986	47.4	31.0	11.1	10.5
1985	45.4	33.3	10.1	11.2
1984	41.4	39.6	6.9	12.1

1/ This income measure was formerly denoted as net cash household income. However, a detailed analysis of farm household financial performance will be published at a later date.

Source: Farm Costs and Returns Surveys, USDA.

Table 5--Average financial characteristics by net farm income and debt/asset ratio position

Item	Favorable	Marginal income	Marginal solvency	Vulnerable	All farms
			Percent		
All farms	66.92	19.48	8.26	5.33	100.00
			Dollars per farm		
Income and expenses:					
Crop sales	24,528	17,042	46,824	25,417	24,959
Livestock sales	26,421	25,573	63,433	45,165	30,313
Other farm income	7,667	4,348	20,604	8,511	8,134
Gross cash farm income	58,615	46,963	130,860	79,093	63,406
Noncash adjustments	12,624	-935	16,528	1,639	9,719
Gross farm income	71,240	46,027	147,388	80,732	73,125
Total expenses	45,437	65,084	105,653	108,279	57,591
Net farm income	25,803	-19,056	41,735	-27,547	15,534
Nonfarm income	27,812	34,847	23,904	28,469	28,895
Farm assets	360,788	409,237	290,219	270,357	359,575
Land and buildings	239,212	269,884	179,708	167,903	236,469
Farm equipment	37,468	40,682	46,643	42,851	39,140
Livestock inventory	25,689	27,683	36,248	30,721	27,219
Crop inventory	10,121	6,504	11,988	8,225	9,469
Purchased inputs	1,708	1,852	2,387	2,629	1,841
Other assets	33,820	38,909	12,019	12,264	31,861
Farm operator debt	24,530	37,012	181,831	179,681	48,232
By original term of loan:					
Less than 1 year	3,064	3,467	14,574	16,097	4,788
1-10 years	8,327	12,785	54,079	57,887	15,619
More than 10 years	13,139	20,759	113,179	105,698	27,825
Commodity Credit Corporation crop loans	1,502	1,574	5,451	5,425	2,052
Net worth	336,258	372,226	108,388	90,675	311,343
			Ratio		
Ratios:					
Debt to asset	0.07	0.09	0.63	0.66	0.13
Return on assets	.05	-.06	.13	-.10	.02
Cash expenses/gross income	.69	1.22	.74	1.25	.82
Interest/gross income	.05	.10	.10	.21	.07

Source: 1988 Farm Costs and Returns Survey, USDA.

As with net farm income, the largest declines in percent of operations with positive income were confined to particular farm sizes, regions, and types. In the three economic classes between $10,000 and $99,999, the decline in the share of farms with positive net cash income ranged from 6 to 9 percentage points. The Corn Belt, Delta, Northern Plains, and Pacific regions had the largest declines among the regions. Operations specializing in cash grains, cotton, nursery or greenhouse, and other livestock saw average net cash income fall at least 6 points.

Debt/Asset Ratios Improve

The distribution of farm and ranch operations by debt/asset ratio indicates that 48 percent of farms ended 1988 with no outstanding liabilities, an improvement of 4 points over 1987. The debt/asset ratio is a financial measure of solvency, or the ability to pay all legal debts. At the other extreme, fewer farms had relatively high levels of debt compared with assets. The 4.4 percent of farms with debt/asset ratios above 0.70 owed 19.4 percent of farm operator debt at the end of 1988, down from 23.4 percent a year earlier. The average debt/asset ratio for U.S. farms at the end of 1988 was 0.13 compared with 0.15 at the end of 1987.

Higher asset values, thanks to increases in land values and coupled with continuing efforts by farmers to avoid debt financing and reduce current debt levels, have resulted in a stronger solvency position for farmers. At the end of 1988, farm operators had average assets of $359,600 per farm and debt of $48,200, resulting in a net worth of $311,300. In 1987, farmers had assets of $349,700, debt of $52,900, and an average net worth of $296,800.

Debt/asset ratios were highest for the larger economic classes, for farms specializing in poultry, dairy, cash grains, and cotton, and in the Lake States, Corn Belt, and Northern Plains.

A more detailed analysis of 1988 farm financial performance will be available in late September in *Financial Characteristics of U.S. Farms, January 1, 1989.*

Table 6--Average operating characteristics by net farm income and debt/asset ratio position

Item	Favorable	Marginal income	Marginal solvency	Vulnerable	All farms
			Percent		
All farms	66.92	19.48	8.26	5.33	100.00
Economic class:					
Sales over $250,000	59.39	15.90	16.79	7.92	100.00
Sales $40,000-$250,000	62.13	16.25	14.22	7.40	100.00
Sales under $40,000	69.38	21.01	5.28	4.33	100.00
Production specialty:					
Cash grain	61.68	18.89	12.40	7.03	100.00
Tobacco	78.06	10.61	6.35	4.97	100.00
Cotton	69.48	14.63	10.19	5.70	100.00
Other field crops	71.98	10.93	10.40	6.69	100.00
Vegetable, fruit, nut	70.92	17.02	6.71	5.35	100.00
Nursery, greenhouse	68.24	18.56	5.68	7.52	100.00
Beef, hog, sheep	68.33	22.29	5.21	4.17	100.00
Poultry	59.19	9.44	22.79	8.58	100.00
Dairy	63.95	14.90	15.10	6.05	100.00
Other livestock	53.95	34.31	6.46	5.28	100.00
Region:					
Northeast	70.82	18.92	6.52	3.74	100.00
Lake States	58.25	21.52	13.16	7.07	100.00
Corn Belt	64.60	20.47	8.23	6.71	100.00
Northern Plains	63.31	16.25	13.54	6.91	100.00
Appalachia	75.07	16.56	5.72	2.65	100.00
Southeast	72.25	19.19	5.40	3.15	100.00
Delta	75.57	14.34	5.92	4.17	100.00
Southern Plains	60.42	27.29	6.83	5.45	100.00
Mountain	69.02	15.56	9.31	6.11	100.00
Pacific	64.91	18.73	9.02	7.34	100.00
			Acres per farm		
Land characteristics:					
Acres owned	269	316	232	257	274
Acres cash rented	113	173	210	305	143
Acres share rented	55	52	146	85	64
Acres operated	516	637	662	761	565
Crop acres irrigated	19	17	37	27	21
Pasture	257	315	230	393	273
			Peak number		
Livestock:					
Cattle	52	55	71	68	55
Hogs	30	41	70	79	38
Sheep	6	6	14	13	7
Poultry	272	580	1,254	1,372	472
Other	304	96	135	384	254
			Years		
Operator:					
Age	55	52	43	43	53
Education	12	12	13	13	12
Number of dependents	3	3	4	3	3

Source: 1988 Farm Costs and Returns Survey, USDA.

A Note On Forecast Errors

Forecasting is the backbone of ERS' Situation and Outlook program. Financial forecasts for a given year begin with USDA's Agricultural Outlook Conference in the fall preceding the forecast year and continue until final estimates are constructed approximately 18 months later. Forecasts are published quarterly in the *Agricultural Income and Finance Situation and Outlook report* and *Agricultural Outlook*.

There is an error associated with each forecast, which is simply the difference between the final estimate and the forecast. This error tends to decrease as time progresses and more complete data become available (tables 7 and 8). Estimates are referred to as final only to distinguish them from the forecasts and are considered final only in the sense that they are not based on any forecasts. However, statistical series are subject to revision for a number of years as new and revised data become available.

Each component of farm income is forecast separately and the magnitude of the associated errors varies considerably. The forecast errors for farm related income are particularly large in percentage terms and remain high through the forecast periods. However, farm related income is a relatively small component of income. The 27-percent error for the second quarter is only $1.1 billion.

The forecast errors for the inventory adjustment were, on average, the largest of all the forecast items for every quarter. One of the factors that makes this a difficult variable is that it is not forecast directly but results from the combination of other forecasts. Not only do forecast errors in prices, production, marketing patterns, and CCC loan activity all affect the inventory adjustment forecast, but these errors may compound each other rather than be offsetting.

The other large forecast errors are for net cash and net farm income. Just as with the inventory adjustment, net cash and

Table 7--Error variation (dollars) in farm income forecasts, by forecast date (1982-88 average)

Income component	Outlook Conference	1st Qtr. Average	2nd Qtr. Average	3rd Qtr. Average	4th Qtr. Average	1st Qtr. Average	2nd Qtr. Average
				Billion dollars			
Cash receipts	5.2	5.3	5.2	3.4	3.6	2.6	1.0
Crops	4.2	3.9	4.1	3.2	3.3	1.4	.8
Livestock	2.9	2.4	1.6	.8	.8	2.5	.5
Direct Gov't. payments	3.2	1.6	.7	.7	.3	.7	.2
Farm related income	1.4	1.4	1.1	.8	.8	.8	.7
Gross cash income	6.5	6.9	6.0	4.5	4.3	2.9	1.7
Nonmoney income	1.3	1.1	.9	.8	.6	.5	.4
Realized gross income	6.5	6.6	5.8	4.7	4.5	4.2	2.8
Inventory adjustment	3.5	3.2	3.0	2.6	2.0	2.0	1.2
Total gross income	7.6	7.4	6.7	6.0	5.8	4.2	2.7
Cash expenses	8.0	6.0	4.4	3.4	2.5	2.4	1.9
Total expenses	8.7	6.8	4.9	3.8	2.8	2.6	2.0
Net cash income	9.6	8.2	5.9	4.4	4.4	3.0	1.7
Net farm income	7.0	7.0	5.7	5.9	5.6	3.8	2.2
Off-farm income	2.2	2.2	2.1	1.7	2.0	2.0	2.0

Table 8--Error variation (percent) in farm income forecasts, by forecast date (1982-88 average)

Income component	Outlook Conference	1st Qtr. Average	2nd Qtr. Average	3rd Qtr. Average	4th Qtr. Average	1st Qtr. Average	2nd Qtr. Average
				Percent			
Cash receipts	3.6	3.7	3.6	2.4	2.6	1.9	.7
Crops	6.1	5.7	6.0	4.6	4.7	2.1	1.1
Livestock	3.8	3.2	2.1	1.0	1.2	3.3	.6
Direct Gov't. payments	34.6	21.6	9.8	7.7	4.1	6.3	1.7
Farm related income	36.3	34.4	28.5	19.8	19.1	18.6	16.0
Gross cash income	4.0	4.3	3.7	2.8	2.8	1.8	1.1
Nonmoney income	10.7	9.5	7.7	6.7	4.7	4.5	3.6
Realized gross income	3.7	3.8	3.4	2.7	2.6	2.4	1.6
Inventory adjustment	149.4	109.5	95.1	88.4	91.6	128.8	94.9
Total gross income	4.6	4.4	4.0	3.6	3.5	2.5	1.6
Cash expenses	7.3	5.5	4.0	3.2	2.4	2.3	1.7
Total expenses	6.5	5.1	3.7	2.9	2.2	2.0	1.5
Net cash income	20.9	17.7	13.0	9.6	10.0	6.9	4.0
Net farm income	20.6	21.1	20.5	21.8	19.1	12.9	6.8
Off-farm income	5.1	5.1	4.8	4.0	4.6	4.7	4.8

net farm income are the result of other forecasts. They are constructed by subtracting an expense forecast from an income forecast. Therefore the forecast errors of these numbers are expected to be larger than for the other components because errors in the income components may compound each other. In addition, both net income numbers are less than half the magnitude of either expenses or gross income so a given absolute error will be much larger proportionately. Thus, relatively good forecasts of both gross income and expenses can result in very large forecast errors for net income.

An important thing to note is that a given dollar forecast error will be proportionately larger for net income than for gross income or expenses. The average errors for the final forecast illustrate this point (last column of tables 7 and 8). The forecast error for gross cash income was, on average, $1.7 billion or 1.1 percent. The final forecast error for net cash income was also $1.7 billion, an error of over 3 percent, nearly three times the relative forecast error for gross cash income.

Three things should always be kept in mind when using the income forecasts. First, the forecasts improve as the year progresses. Second, the net income forecasts cannot be expected to have the same accuracy as the forecasts of the individual income and expense items because these errors are additive and may compound each other. Finally, because both net cash income and net farm income are much smaller than gross income or expenses, a given dollar forecast error will be a much larger proportion of the net income estimate than of either the gross income or the expense estimates.

Preliminary 1988 State Farm Income Estimates

The first estimates of 1988 farm income for the United States and individual States are now available (appendix table 2). Until early August 1989, only a forecast of U.S. farm income had been made. Detailed estimates of individual components are made at the State level as data become available. The State estimates allow the construction of a more accurate U.S. estimate to supersede the previous forecast.

The current estimate of 1988 farm income will be revised over several years as additional data and revisions become available from the USDA and other sources, and from Agricultural Censuses every 5 years. The USDA estimates are benchmarked to the Census estimates. State statistics from the 1987 Census are becoming available, with the U.S. statis-

tics to follow. In addition, the results of an important Census follow-up survey conducted in 1988 will be published after the Census volumes are released.

Commodity receipts make up most of gross income and are estimated primarily from data provided by NASS (appendix table 4). Most of the production, price and marketing data required for the receipt estimates are published after the close of the year. The majority of the data are released from January through the end of June, but for some commodities, for example, citrus and potatoes, they are not available until September. Crucial information about the distribution of sales within a crop year for major crops are not published until December.

To have a complete and consistent set of estimates by early August, data available after July 1 cannot be incorporated until the following year. The marketing pattern data are often the source of large revisions because they affect the allocation of sales for major crops between the two calendar years within a crop year. All releases of commodity data contain revisions for at least 1 prior year. Following release of Census data, NASS revises commodity statistics back to the prior Census, which has a ripple effect through all dependent income statistics.

The annual Farm Costs and Returns Survey is the source for most of the data related to production expenses (appendix table 6). The survey is conducted in February and March when producers are preparing their tax records. The survey results are available in late May, and provide the first data on which to base either a forecast or estimate of production expenditures in the prior year. Thus, analysts have about five weeks to produce a reliable, internally consistent set of estimates in approximately 30 expense accounts for 50 States. The expense estimates are also benchmarked to the 5-year Census statistics, with revisions to the intervening years.

The first estimates of 1988 income, published in this report, show that both net cash income and net farm income were higher than had been forecast. As forecasts, both crop and livestock receipts attained new high levels last year but the new estimates of $72.6 billion for crops and $78.9 billion for livestock are 0.8 percent and 1.2 percent higher, respectively, than the last published forecasts. The final estimate of $177.6 billion for gross farm income is 0.3 percent above the forecast while the estimate for gross cash income is up 0.9 percent.

The final expense estimates are slightly lower than last forecast. The 1988 cash expenses are now estimated at $111.7 billion (down 1.2 percent from forecast) and total expenses at $132.0 billion (down 0.8 percent). The relatively small revisions in the estimates for receipts and expenses by themselves would result in higher estimates of net income. Together, they raise the estimate of net cash income to $59.9 billion (up 3.3 percent) and $45.7 billion for net farm income (up 3.9 percent).

Net farm income fell 3.1 percent in 1988 and net cash income rose 3.8 percent. Direct Government payments to farmers were 13.5 percent lower than in 1987 and constituted 32 percent of net farm income in 1988 versus 36 percent in 1987.

Forecasts of a severe drought were made early in 1988, resulting in a substantial rise in prices for feed and food grains, and oil crops. These prices rose until harvest and then remained at high levels after harvest. Farmers found it profitable, and increasingly so as the year progressed, to reclaim large quantities of commodities previously placed under CCC loans and sell them on the open market. This opportunity arose because market prices exceeded the loan rates on the existing contracts. As an example, in the case of corn, the premium realized on redemption and resale transactions ranged from 50 to 85 cents per bushel in the second and third quarters of 1988. Crop receipts rose by 14 percent from the prior year due to a combination of higher market prices, a sell-off of farmer-owned crop inventories, and profits from the resale of commodities previously under CCC loan. Also noteworthy was the fact that the sell-off of the cattle herd, which had been on-going for several years, did not extend into 1988.

Drought conditions in 1988 were regional, hitting the Northern Plains and Midwest States more severely than other regions. Net farm income in both the Corn Belt and Lake States decreased on average more than 22 percent. Declines in net farm income in the Northern Plains fell on average more than 12 percent. In the Corn Belt and Lake States, declining net farm income resulted from falling gross farm income and rising production expenses. Northern Plains States had increases in production expenses which outweighed marginal increases in gross farm income.

The changes in net farm income between 1987 and 1988 varied among States. Twenty-seven States had increases in net farm income. The average increase was 10.6 percent. The average decrease in net farm income among the other 23 States was 16.0 percent. Effects of the drought were greatest in the Midwest (Corn Belt, Lake States, and Northern Plains) where feed grain production is centered. Feed grain receipts accounted for 13 percent of total receipts among States, with declining net farm income mostly in the Midwest. For

Table 9--Percent change in net farm income, 1987 to 1988

Corn Belt	-22.6	Pacific States	-0.1
Lake States	-22.5	Mountain States	2.5
Northern Plains	-12.5	Appalachian	11.4
Northeast	-2.0	Southeast	16.0
Southern Plains	-.3	Delta States	35.3

States with increasing net farm income, feed grain receipts were 4.5 percent of total receipts.

The States incurring the largest percentage declines in net farm income were the ones hit hardest by drought conditions. North Dakota's net farm income fell by over 52 percent from 1987 to 1988. Illinois, Indiana, Iowa, and Minnesota also suffered substantial declines.

Drought forecasts raised feed grain, food grain, and oilseed prices. Farmers responded by drawing down on-farm inventories. Many fa rmers also reclaimed previously placed CCC commodities to fill the gap in their income resulting from decreases in production brought on by drought conditions. Receipts from the sale of crops increased despite lower production. Twelve of 23 States with less net farm income also had declines in gross farm income, reflecting insufficient commodities available for sale to take advantage of the higher crop prices.

Net farm income increased from 1987 to 1988 in 27 States. It was record high in 22 States, and the remaining 5 had notable increases from a relatively poor 1987. Overall, States with higher net farm income had increases in gross farm income which were greater than gains in total production expenses. Gross farm income increased for 37 States, 23 of which had a positive inventory adjustment, meaning that current production exceeded sales in many States not affected by the drought.

Drought Affects State Rankings

California and Texas remained the top two net farm income States in 1988. Four of the top 10 in 1987 fell one or more

Table 10--State rankings for net farm income: total, per farming operation and per acre, 1988

Rank	Total		Per operation		Per Acre	
	State	Value ($1000)	State	Value (dollars)	State	Value (dollars)
1	CALIFORNIA	6,058.0	CALIFORNIA	77,666	RHODE ISLAND	743
2	TEXAS	3,671.1	FLORIDA	71,863	NEW JERSEY	439
3	FLORIDA	2,874.5	RHODE ISLAND	71,364	CONNECTICUT	406
4	NEBRASKA	2,097.8	ARIZONA	70,254	DELAWARE	350
5	IOWA	2,010.0	DELAWARE	68,807	MASSACHUSETTS	306
6	NORTH CAROLINA	1,700.3	NEW JERSEY	49,228	FLORIDA	221
7	KANSAS	1,588.7	CONNECTICUT	48,284	CALIFORNIA	186
8	ARKANSAS	1,564.1	HAWAII	38,895	MARYLAND	177
9	MINNESOTA	1,510.5	NEBRASKA	38,143	NORTH CAROLINA	162
10	GEORGIA	1,370.9	MASSACHUSETTS	34,066	NEW HAMPSHIRE	132
11	WISCONSIN	1,343.3	WASHINGTON	33,515	PENNSYLVANIA	106
12	WASHINGTON	1,273.6	ARKANSAS	33,278	GEORGIA	105
13	ILLINOIS	1,166.0	GEORGIA	27,977	ARKANSAS	104
14	OKLAHOMA	1,113.2	COLORADO	27,511	ALABAMA	[illegible]
15	ALABAMA	966.8	IDAHO	27,058	HAWAII	[illegible]
16	KENTUCKY	934.5	MARYLAND	25,[illegible]	WASHINGTON	[illegible]
17	OREGON	932.0	OREGON	25,533	WISCONSIN	76
18	MISSISSIPPI	930.8	NORTH CAROLINA	24,290	VERMONT	75
19	MISSOURI	900.3	TEXAS	23,533	MAINE	71
20	PENNSYLVANIA	892.1	KANSAS	23,025	MISSISSIPPI	69
21	SOUTH DAKOTA	781.0	SOUTH DAKOTA	22,636	NEW YORK	67
22	TENNESSEE	769.3	MISSISSIPPI	21,647	KENTUCKY	64
23	OHIO	766.6	NEW MEXICO	21,638	LOUISIANA	64
24	COLORADO	751.0	NEW HAMPSHIRE	20,754	VIRGINIA	62
25	INDIANA	621.6	ALABAMA	19,731	SOUTH CAROLINA	61
26	IDAHO	608.8	IOWA	18,785	TENNESSEE	60
27	LOUISIANA	604.7	ALASKA	18,097	IOWA	[illegible]
28	MICHIGAN	601.7	LOUISIANA	17,277	MICHIGAN	54
29	VIRGINIA	595.0	NEVADA	16,926	OREGON	52
30	NEW YORK	571.2	VERMONT	16,763	MINNESOTA	50
31	ARIZONA	569.1	WISCONSIN	16,381	OHIO	49
32	MARYLAND	415.5	OKLAHOMA	16,134	NEBRASKA	45
33	NORTH DAKOTA	372.5	MINNESOTA	16,069	IDAHO	44
34	NEW JERSEY	364.3	PENNSYLVANIA	15,930	ILLINOIS	41
35	SOUTH CAROLINA	323.5	NEW YORK	14,281	INDIANA	38
36	NEW MEXICO	292.1	ILLINOIS	14,048	OKLAHOMA	34
37	MONTANA	242.3	UTAH	14,035	KANSAS	33
38	MASSACHUSETTS	207.8	MAINE	13,684	MISSOURI	30
39	DELAWARE	206.4	SOUTH CAROLINA	12,208	TEXAS	28
40	UTAH	186.7	VIRGINIA	12,142	COLORADO	22
41	CONNECTICUT	178.7	NORTH DAKOTA	11,462	SOUTH DAKOTA	18
42	HAWAII	171.1	WYOMING	11,338	WEST VIRGINIA	18
43	VERMONT	119.0	MONTANA	10,399	UTAH	17
44	MAINE	106.7	MICHIGAN	10,375	ARIZONA	16
45	WYOMING	98.6	KENTUCKY	9,439	NORTH DAKOTA	9
46	NEW HAMPSHIRE	68.5	OHIO	9,127	ALASKA	[illegible]
47	WEST VIRGINIA	63.7	INDIANA	8,634	NEW MEXICO	6
48	RHODE ISLAND	53.5	TENNESSEE	8,184	NEVADA	5
49	NEVADA	40.6	MISSOURI	7,968	MONTANA	4
50	ALASKA	11.8	WEST VIRGINIA	3,106	WYOMING	3
	UNITED STATES	45,661.7	UNITED STATES	21,151	UNITED STATES	46

Table 11--Net farm income for States, 1987-88

State	1987			1988		
	Gross farm income	Total production expenses	Net farm income	Gross farm income	Total production expenses	Net farm income
	Million dollars					
ALABAMA	2,594.2	1,791.1	803.1	2,886.3	1,919.5	966.8
ALASKA	37.7	22.6	15.1	37.4	25.6	11.8
ARIZONA	2,030.4	1,471.2	559.3	2,157.0	1,588.0	569.1
ARKANSAS	3,900.7	2,720.9	1,179.9	4,578.2	3,014.1	1,564.1
CALIFORNIA	17,121.7	11,066.4	6,055.3	17,741.9	11,684.0	6,058.0
COLORADO	4,024.8	3,270.6	754.2	4,447.3	3,696.2	751.0
CONNECTICUT	462.9	292.3	170.6	478.0	299.4	178.7
DELAWARE	524.0	385.1	138.9	636.0	429.5	206.4
FLORIDA	5,719.5	3,237.6	2,481.9	6,197.6	3,323.1	2,874.5
GEORGIA	3,773.3	2,558.9	1,214.4	4,110.5	2,739.7	1,370.9
HAWAII	599.6	427.7	172.0	609.2	438.1	171.1
IDAHO	2,556.4	1,939.5	616.8	2,699.3	2,090.5	608.8
ILLINOIS	7,753.0	6,182.0	1,571.0	7,563.0	6,397.0	1,166.0
INDIANA	4,845.0	3,942.1	902.9	4,633.6	4,012.0	621.6
IOWA	11,015.7	8,330.4	2,685.3	10,783.1	8,773.1	2,010.0
KANSAS	7,325.1	5,631.7	1,693.4	7,945.2	6,356.5	1,588.7
KENTUCKY	2,969.0	2,089.8	879.2	3,138.0	2,203.5	934.5
LOUISIANA	1,852.5	1,477.8	374.6	2,180.8	1,576.1	604.7
MAINE	523.1	386.8	136.3	508.0	401.2	106.7
MARYLAND	1,355.6	974.6	381.0	1,451.1	1,035.7	415.5
MASSACHUSETTS	491.4	320.4	171.1	543.4	335.6	207.8
MICHIGAN	3,341.6	2,586.5	755.2	3,241.5	2,639.7	601.7
MINNESOTA	7,467.0	5,467.8	1,999.2	7,033.4	5,522.9	1,510.5
MISSISSIPPI	2,591.6	1,854.9	736.7	2,867.8	1,937.0	930.8
MISSOURI	4,476.2	3,505.8	970.4	4,637.9	3,737.6	900.3
MONTANA	1,858.4	1,499.3	359.1	1,715.1	1,472.8	242.3
NEBRASKA	8,731.2	6,640.2	2,091.0	9,755.0	7,657.1	2,097.8
NEVADA	244.5	207.7	36.8	255.6	214.9	40.6
NEW HAMPSHIRE	183.2	119.3	64.0	192.5	124.0	68.5
NEW JERSEY	840.9	486.3	354.7	868.1	503.8	364.3
NEW MEXICO	1,338.5	1,041.9	296.6	1,465.8	1,173.7	292.1
NEW YORK	2,957.1	2,297.6	659.5	2,908.6	2,337.4	571.2
NORTH CAROLINA	4,717.7	3,180.1	1,537.6	5,108.2	3,407.9	1,700.3
NORTH DAKOTA	3,178.0	2,401.2	776.8	2,641.6	2,269.1	372.5
OHIO	4,189.6	3,257.1	932.5	4,122.5	3,355.8	766.6
OKLAHOMA	3,644.8	2,618.3	1,026.6	4,178.7	3,065.5	1,113.2
OREGON	2,407.4	1,594.1	813.3	2,612.3	1,680.3	932.0
PENNSYLVANIA	3,752.5	2,755.0	997.4	3,806.1	2,914.0	892.1
RHODE ISLAND	89.7	41.4	48.2	96.9	43.3	53.5
SOUTH CAROLINA	1,195.7	923.2	272.5	1,310.9	987.4	323.5
SOUTH DAKOTA	3,389.3	2,417.9	971.3	3,308.2	2,527.2	781.0
TENNESSEE	2,663.7	2,024.3	639.4	2,822.1	2,052.8	769.3
TEXAS	12,691.3	8,917.5	3,773.8	12,981.7	9,310.6	3,671.1
UTAH	753.8	580.3	173.5	830.9	644.2	186.7
VERMONT	488.4	361.8	126.5	494.0	374.9	119.0
VIRGINIA	2,208.3	1,657.4	550.9	2,384.6	1,789.6	595.0
WASHINGTON	3,823.6	2,426.6	1,396.9	3,945.1	2,671.6	1,273.6
WEST VIRGINIA	330.7	290.8	39.9	377.6	314.0	63.7
WISCONSIN	5,836.3	4,130.8	1,705.5	5,492.1	4,148.9	1,343.3
WYOMING	757.6	694.5	63.1	845.7	747.1	98.6
UNITED STATES	171,624.4	124,499.1	47,125.3	177,625.2	131,963.5	45,661.7

positions in the 1988 ranking. Iowa and Minnesota fell within the top 10 rankings. Wisconsin and Illinois were replaced in the top 10 by Arkansas and Georgia. Florida, Nebraska, North Carolina, and Arkansas moved up in ranking, and Kansas advanced despite a decline in net farm income. Corn Belt, Lake, and Northern Plain States generally dropped in net farm income rankings while the Southeast, Appalachian, and Delta States tended to rise. Overall, the top 10 net farm income States accounted for $24.4 billion, or 53.5 percent of U.S. net farm income.

Rankings of net farm income on a per-operation and per-acre basis did not change as dramatically as total net farm income rankings because of drought conditions. Little change occurred since the principal farm income States (in the Midwest) tend to be lower ranked on a per-operation or per-acre basis. Corn and livestock tend to be associated with low per-operation and low per-acre net farm income. Greenhouse and nursery and citrus tend to be the opposite. Changes in top 10 ranked States for per operation net farm income include Florida increasing from number 4 to number 2 and Arizona dropping from 2 to 4.

Net farm income in 1988 declined in six of the top 10 States: Iowa, Minnesota, Kansas, California, Texas, and Nebraska. North Carolina, Florida, Georgia, and Arkansas had net farm

Table 12--Farm marketings, 1987 and 1988; Government payments, 1988; and, principal commodities, 1988, by State

State	1987 Farm marketings: Total	1987 Farm marketings: Crops	1987 Farm marketings: Livestock and products	1988 Farm marketings: Total	1988 Farm marketings: Crops	1988 Farm marketings: Livestock products	1988 Government payments	State rank for total farm marketings, four principal commodities in order of marketing receipts and percentage of total marketings
	Million dollars							
AL	2,154.4	633.1	1,521.4	2,400.4	705.8	1,694.6	114.5	25-Broilers, cattle, [illegible], peanuts (69%)
AK	29.5	18.8	10.7	30.2	20.4	9.8	1.8	50-Greenhouse, dairy prod, hay, potatoes (82%)
AZ	1,759.9	987.3	772.6	1,959.5	1,166.9	792.5	77.8	31-Cattle, cotton, dairy prod, lettuce (64%)
[illegible]	3,195.0	1,111.6	2,083.3	3,974.1	1,695.7	2,278.4	343.9	17-Broilers, soybeans, rice, cattle (67%)
CA	15,808.3	11,382.3	4,426.0	16,598.3	11,894.5	4,703.8	335.1	1-Dairy prod, cattle, greenhouse, grapes (39%)
CO	3,207.2	884.7	2,322.6	3,692.0	1,037.1	2,654.9	280.5	16-Cattle, wheat, corn, dairy prod (80%)
CT	385.1	194.0	191.1	382.1	202.2	179.9	2.9	44-Eggs, greenhouse, dairy prod, tobacco (76%)
DE	486.7	116.4	370.3	592.3	148.8	443.5	10.5	41-Broilers, soybeans, corn, greenhouse (82%)
FL	5,454.1	4,368.2	1,085.9	5,810.8	4,696.9	1,114.0	32.0	9-Greenhouse, oranges, tomatoes, sugar (51%)
[illegible]	3,123.8	1,298.9	1,824.9	3,544.4	1,533.4	2,010.9	174.0	14-Broilers, peanuts, [illegible], cattle (60%)
HI	560.3	472.6	87.7	567.6	479.0	88.6	0.4	38-Sugar, pineapples, greenhouse, nuts (74%)
ID	2,088.9	1,164.5	924.4	2,291.3	1,257.9	1,033.4	166.8	26-Cattle, dairy prod, potatoes, wheat (64%)
IL	6,098.7	3,849.8	2,248.9	6,461.0	4,217.5	2,243.5	1,374.0	5-Corn, soybeans, hogs, cattle (90%)
IN	3,705.7	1,831.9	1,873.8	4,116.8	2,367.4	1,749.3	616.3	10-Corn, hogs, soybeans, cattle (75%)
IA	8,764.7	3,563.0	5,201.7	9,074.0	4,028.9	5,045.1	1,665.0	2-Hogs, corn, cattle, soybeans (92%)
KS	5,881.9	1,962.6	3,919.4	6,594.3	2,328.8	4,265.5	848.0	7-Cattle, wheat, sorghum grain, corn (83%)
KY	2,447.9	940.5	1,507.5	2,530.2	992.1	1,538.1	160.9	23-Tobacco, horses, cattle, dairy prod (70%)
LA	1,475.9	964.6	511.3	1,885.4	1,298.7	586.7	190.1	32-Soybeans, cotton, cattle, [illegible] (50%)
[illegible]	411.5	183.9	227.6	404.1	188.0	216.1	7.3	45-Dairy prod, potatoes, [illegible], cattle (75%)
MD	1,139.7	405.3	734.4	1,226.2	458.6	767.6	42.7	34-Broilers, dairy prod, greenhouse, cattle (71%)
[illegible]	379.2	258.6	120.6	402.4	297.4	105.0	2.8	42-Greenhouse, cranberries, dairy prod, eggs (75%)
[illegible]	2,593.8	1,311.3	1,282.5	2,669.7	1,464.0	1,205.6	303.0	19-Dairy prod, corn, cattle, hogs (56%)
[illegible]	5,831.1	2,270.1	3,561.0	6,106.7	2,742.5	3,364.2	1,035.9	6-Dairy prod, corn, cattle, hogs (65%)
[illegible]	1,986.6	944.6	1,042.0	2,340.7	1,164.4	1,176.3	242.5	28-Broilers, cotton, soybeans, cattle (69%)
[illegible]	3,687.3	1,585.7	2,101.6	3,825.6	1,814.3	2,011.4	456.9	13-Soybeans, cattle, hogs, [illegible] (71%)
MO	1,355.4	608.1	747.3	1,386.1	569.9	816.2	386.7	33-Cattle, wheat, barley, hay (85%)
MT	6,823.6	1,966.8	4,856.8	7,978.7	2,642.5	5,336.2	1,091.5	4-Cattle, corn, hogs, soybeans (87%)
[illegible]	232.3	68.6	163.7	229.3	78.8	150.5	6.3	46-Cattle, hay, dairy prod, potatoes (89%)
NV	139.0	71.7	67.3	137.0	76.6	60.4	1.9	48-Dairy prod, greenhouse, apples, cattle (77%)
NH	632.7	437.7	195.0	642.2	450.4	191.9	10.8	37-Greenhouse, dairy prod, eggs, peaches (49%)
[illegible]	1,167.9	350.9	817.0	1,272.5	362.2	910.3	71.4	35-Cattle, dairy prod, hay, chili peppers (74%)
NY	2,609.5	800.2	1,809.4	2,605.1	824.0	1,781.2	[illegible]	21-Dairy prod, greenhouse, cattle, eggs (74%)
[illegible]	3,768.3	1,657.7	2,110.7	4,172.7	1,993.8	2,178.9	146.0	11-Tobacco, broilers, hogs, turkeys (57%)
ND	2,362.8	1,600.7	762.1	2,422.9	1,573.6	849.3	715.1	24-Wheat, cattle, barley, sunflower (69%)
OH	3,477.8	1,862.0	1,615.8	3,629.0	2,024.7	1,604.2	381.9	12-Corn, soybeans, dairy prod, hogs (68%)
[illegible]	2,876.7	810.7	2,066.0	3,410.4	1,126.6	2,283.8	288.4	20-Cattle, wheat, dairy prod, broilers (78%)
[illegible]	1,890.5	1,235.8	654.7	2,096.1	1,426.8	669.3	97.8	29-Cattle, greenhouse, dairy prod, wheat (47%)
[illegible]	3,213.0	903.5	2,309.5	3,283.7	935.4	2,348.3	64.9	15-Dairy prod, cattle, greenhouse, eggs (68%)
RI	76.9	64.2	12.8	78.5	65.5	13.0	0.1	49-Greenhouse, dairy prod, eggs, potatoes (67%)
SC	929.3	479.3	449.9	1,078.4	590.3	488.1	76.9	36-Tobacco, cattle, soybeans, dairy prod (43%)
SD	2,726.4	819.7	1,906.7	2,910.7	945.5	1,965.2	496.0	22-Cattle, hogs, corn, wheat (73%)
TN	1,983.5	873.7	1,109.8	2,045.7	965.3	1,080.4	140.4	27-Cattle, dairy prod, greenhouse, soybeans (57%)
TX	8,998.4	2,906.7	6,091.7	10,281.1	3,782.9	6,498.2	1,155.3	3-Cattle, cotton, dairy prod, greenhouse (69%)
UT	599.6	133.9	465.6	687.4	150.5	537.0	38.4	39-Cattle, dairy prod, turkeys, hay (71%)
VT	422.2	45.3	376.9	404.5	52.5	352.0	5.9	43-Dairy prod, cattle, hay, apples (93%)
VA	1,758.5	484.0	1,274.5	1,885.9	592.0	1,293.9	64.3	30-Cattle, dairy prod, broilers, turkeys (57%)
WA	2,861.7	1,880.2	981.5	3,286.7	2,145.9	1,140.8	207.9	18-Dairy prod, cattle, apples, wheat (56%)
WV	234.4	59.9	174.5	248.4	69.8	178.6	12.2	47-Dairy prod, broilers, apples, cattle (70%)
WI	5,015.4	799.2	4,216.2	5,047.9	767.1	4,280.8	409.4	8-Dairy prod, cattle, corn, hogs (85%)
WY	655.1	126.7	528.4	730.2	155.5	574.7	37.7	40-Cattle, sheep, [illegible] beets, hay (86%)
[illegible]	139,468.4	63,751.4	75,717.0	151,430.8	72,569.0	[illegible],861.7	14,479.8	Cattle, dairy prod, corn, hogs (52%)

income increases from 1987 to 1988. The Southeastern States generally had favorable growing conditions and were able to take full advantage of the high crop prices in 1988.

Regionally, both per-operation and per-acre net farm income was highest in the Southeast, Northeast, and Pacific States because of the production of specialty crops and poultry. Appalachian, Delta, Lake, and Corn Belt States tended to have moderate net farm income per operation and per acre. The Northern Plains, Southern Plains, and Mountain States had high income per operation and low income per acre, indicative of large operations with low-valued products on a per-acre basis.

Farm Sector Balance Sheet

U.S. agriculture's financial position continues to improve. Increases in asset and equity values extended the 1987 and 1988 reversal of the downturn that began in 1982. Higher asset values will boost farm equity, given that little change is expected in total farm debt in 1989 (table 13).

Responding to continuing high net cash income, farm real estate values rose 5.3 percent in 1988. Nationwide real estate assets are forecast to increase 6 to 8 percent. Farm debt dropped more than 3 percent in 1988, down $54 billion from its 1983 peak. During 1989, farm debt is expected to remain at 1988's level of $138 billion. Higher asset values and lower farm debt boosted farm equity $47 billion in 1988. Farm equity is likely to rebound further to a level of $643 to $653 billion by the end of 1989. Preliminary State estimates for December 31, 1988, farm business asset, debt, and equity levels are presented in tables 14-17.

Farm Asset Growth

The value of U.S. agricultural assets (excluding operator households) on December 31, 1989, is estimated at $780 to $790 billion, up 4 to 6 percent from 1988. This increase is mostly due to rising farm real estate values. Real estate values have been lowered to reflect recent data revisions on the amount of farmland.

Nonreal estate assets are expected to remain near 1988 levels. A decline in the value of crop inventories should be mostly offset by increases in machinery and livestock inven-

Table 13--Balance sheet of the farming sector 1/

Year	Current dollars			Deflated dollars ($1982) 2/		
	Assets	Liabilities	Equity	Assets	Liabilities	Equity
	Billion dollars					
1980-84	948.9	184.4	764.5	975.7	188.1	787.6
1985-86	718.0	165.1	552.8	639.2	147.1	492.2
1987	706.3	143.1	563.2	600.1	121.6	478.5
1988	748.5	138.4	610.0	615.0	113.8	501.3
1989F	780 to 790	134 to 142	643 to 653	614 to 624	104 to 114	505 to 515

F = Forecast. 1/ Excludes operator households and CCC commodity loans. 2/ Deflated by the GNP implicit price deflator, 1982 = 100.

Table 14--Farm business assets (excluding households), by State and lender, December 31, 1988

State	Physical assets					Financial assets			Total assets
	Real estate		Nonreal estate						
	Land	Service structures	Livestock and poultry	Machinery and motor vehicles	Crops	Currency	Demand deposits	Investments in cooperatives	
	Million dollars								
Alabama	6,593	378	927	949	121	46	109	396	9,519
Alaska	140	10	6	17	1	4	2	228	408
Arizona	7,166	254	533	369	68	11	49	137	8,587
Arkansas	9,151	533	978	1,424	311	52	158	630	13,237
California	40,367	1,937	3,418	3,237	502	195	683	1,485	51,824
Colorado	11,000	596	2,050	1,149	555	40	120	460	15,970
Connecticut	1,645	257	61	111	25	6	25	47	2,177
Delaware	1,088	126	28	113	40	4	12	48	1,457
Florida	17,803	566	1,145	1,004	49	57	172	727	21,523
Georgia	10,439	660	895	1,244	201	72	165	1,138	14,814
Hawaii	3,116	64	90	158	0	10	27	27	3,492
Idaho	7,456	424	1,003	1,086	820	27	78	222	11,116
Illinois	32,442	1,206	1,565	4,466	2,251	145	303	1,155	43,533
Indiana	15,228	942	1,076	2,725	1,302	96	201	1,005	22,575
Iowa	31,383	1,848	3,837	5,119	2,774	100	312	1,563	46,936
Kansas	16,975	703	3,920	2,958	1,010	62	208	786	26,622
Kentucky	9,313	926	1,401	1,748	768	97	210	548	15,011
Louisiana	5,866	169	553	1,176	189	39	111	230	8,332
Maine	1,287	300	62	202	98	8	18	50	2,045
Maryland	4,228	406	251	536	160	25	54	187	5,847
Massachusetts	1,659	300	52	161	35	15	24	101	2,346
Michigan	7,595	803	878	2,096	547	70	174	414	12,577
Minnesota	15,523	1,297	2,309	4,573	2,159	94	241	1,607	27,803
Mississippi	7,914	404	714	1,207	315	56	117	645	11,372
Missouri	15,996	876	2,678	2,743	1,043	94	325	984	24,739
Montana	9,351	332	1,598	1,342	553	36	93	286	13,591
Nebraska	18,323	702	3,763	3,229	1,886	69	212	610	28,794
Nevada	1,569	93	276	113	43	7	17	33	2,168
New Hampshire	790	121	37	74	18	2	8	16	1,066
New Jersey	5,015	337	66	247	32	14	74	93	5,878
New Mexico	5,696	208	859	367	76	19	53	212	7,490
New York	6,136	1,367	1,193	1,599	188	55	140	494	11,172
North Carolina	9,335	891	649	1,608	254	60	197	603	13,597
North Dakota	11,082	586	1,078	2,311	912	52	126	1,243	17,390
Ohio	13,963	1,031	1,294	2,743	1,078	139	275	955	21,478
Oklahoma	13,507	499	2,876	1,840	413	89	228	313	19,735
Oregon	6,937	501	864	1,104	286	68	127	374	10,261
Pennsylvania	13,646	2,251	1,445	1,559	471	73	128	530	20,103
Rhode Island	381	41	5	16	1	1	4	10	459
South Carolina	4,217	324	333	651	145	34	73	410	6,187
South Dakota	8,128	426	2,370	1,738	1,112	63	85	465	14,387
Tennessee	11,212	787	1,257	1,542	266	94	248	632	16,038
Texas	53,681	1,424	8,502	4,646	883	342	820	1,561	71,861
Utah	4,216	208	545	369	121	17	39	33	5,548
Vermont	1,553	310	211	253	66	8	21	67	2,497
Virginia	9,414	912	921	1,060	294	68	160	220	13,049
Washington	9,858	659	884	1,428	502	46	150	405	13,932
West Virginia	1,627	167	340	277	51	21	48	34	2,485
Wisconsin	8,628	1,730	3,014	3,610	997	83	201	987	19,250
Wyoming	4,319	184	926	382	198	17	31	137	6,194
US Total	513,959	32,063	65,672	74,680	26,197	2,904	7,457	25,545	748,477

Note: Totals may not add due to rounding.

Table 15--Real estate debt outstanding (excluding households), by State and lender, December 31, 1988

State	Federal Land Banks	Farmers Home Administration	Life insurance companies	Commercial banks	CCC storage facility	Individuals and others	Totals
	Million dollars						
Alabama	342	107	50	170	0.27	108	777
Alaska	7	1	6	2	.00	4	19
Arizona	129	65	156	157	.01	138	645
Arkansas	440	289	253	360	.64	195	1,538
California	2,886	236	1,816	650	.13	1,340	6,928
Colorado	748	125	251	147	.34	374	1,645
Connecticut	37	13	27	9	.00	15	101
Delaware	64	15	1	41	.01	22	143
Florida	862	122	637	546	.31	334	2,501
Georgia	721	201	138	452	.50	161	1,674
Hawaii	128	29	30	32	.00	10	229
Idaho	533	256	177	30	.72	326	1,323
Illinois	1,593	334	463	1,209	1.10	902	4,502
Indiana	948	301	282	717	.44	782	3,030
Iowa	1,558	441	545	1,054	2.13	2,033	5,633
Kansas	1,059	271	234	538	.10	427	2,529
Kentucky	357	230	137	567	.23	276	1,617
Louisiana	364	173	137	141	.50	96	912
Maine	31	60	0	5	.08	15	111
Maryland	256	45	11	77	.04	119	508
Massachusetts	23	20	7	5	.00	15	70
Michigan	761	195	42	198	.82	371	1,568
Minnesota	1,522	356	219	579	2.83	1,074	3,753
Mississippi	480	291	192	264	.35	155	1,382
Missouri	667	389	229	806	.64	601	2,693
Montana	621	193	208	102	.17	567	1,691
Nebraska	953	382	415	572	.84	649	2,972
Nevada	81	21	39	2	.00	53	196
New Hampshire	12	7	2	7	.00	3	31
New Jersey	100	25	1	21	.02	66	213
New Mexico	206	70	72	115	.03	142	605
New York	370	163	18	96	.51	225	873
North Carolina	725	267	51	251	.16	161	1,455
North Dakota	815	358	37	218	.35	308	1,736
Ohio	654	195	137	575	.43	420	1,981
Oklahoma	767	353	118	325	.12	351	1,914
Oregon	541	127	424	54	.07	538	1,684
Pennsylvania	414	134	30	395	.10	224	1,197
Rhode Island	6	3	0	4	.00	2	15
South Carolina	369	96	17	49	.08	57	588
South Dakota	455	398	49	140	.87	367	1,410
Tennessee	275	239	48	330	.48	148	1,040
Texas	1,851	186	571	993	.24	1,045	4,846
Utah	168	61	26	29	.18	139	423
Vermont	51	46	0	42	.04	29	168
Virginia	524	97	74	223	.22	146	1,064
Washington	525	161	292	159	.24	372	1,509
West Virginia	71	45	94	59	.02	23	292
Wisconsin	867	317	85	679	3.28	627	2,578
Wyoming	92	56	76	25	.01	129	378
US Total	28,024	8,821	8,923	14,217	20.62	16,670	76,697

Note: Totals may not add due to rounding.

tory values. The value of crops stored on farms rose by over $5 billion in 1988 but may fall about 20 percent in 1989. Livestock and poultry inventory values are expected to rise slightly in 1989. The farm value of machinery and equipment rose about $1 billion in 1988, and is expected to rise by about $1 billion in 1989. The increased sales and higher prices of new machinery are anticipated to more than offset the depreciation of the larger stock of machinery purchased in the early 1980's. Farm financial assets stabilized at about $36 billion in 1988, and are expected to remain at this level through the end of 1989.

Farm Debt Decline Moderates

Total farm debt declined by about 3 percent in 1988 — the fifth consecutive year of decline. The 1988 drought did not produce sectorwide cash shortfalls and escalate new loan demand. Instead, farmers with near-normal production or available inventories benefitted from improved commodity prices. Also, record net cash income provided farmers with adequate cash to meet operating and capital expenses, and reduce debt. Overall, farmers remained cautious in their expansion activities. Land appreciation and general improvement of the economy did not result in a new round of debt-financed growth.

Table 16--Nonreal estate debt outstanding (excluding households), by State and lender, December 31, 1988

State	Commercial banks	PCA's and FICB's	Farmers Home Administration	Individuals and others	Total	CCC commodity loans
	Million dollars					
Alabama	182	126	171	204	683	19
Alaska	[illegible]	0	0	2	10	0
Arizona	476	147	149	147	919	21
Arkansas	393	137	463	289	1,282	114
California	2,546	1,283	579	954	5,362	121
Colorado	66[illegible]	166	111	418	1,364	278
Connecticut	31	41	9	22	103	0
Delaware	24	[illegible]	7	51	120	4
Florida	309	204	217	248	978	3
Georgia	277	139	702	266	1,384	40
Hawaii	18	41	11	26	96	[illegible]
Idaho	539	102	202	184	1,027	186
Illinois	1,826	170	272	496	2,764	1,912
Indiana	853	164	277	330	1,624	674
Iowa	2,392	152	527	744	3,[illegible]15	2,561
Kansas	1,802	127	203	677	2,[illegible]09	557
Kentucky	368	166	261	168	963	89
Louisiana	208	124	680	129	1,141	64
Maine	45	52	91	31	219	1
Maryland	50	134	29	103	316	14
Massachusetts	49	52	13	21	135	0
Michigan	399	287	317	209	1,212	248
Minnesota	1,454	447	535	489	2,925	1,773
Mississippi	262	113	841	167	1,383	95
Missouri	935	140	421	310	1,806	383
Montana	445	75	305	110	935	295
Nebraska	2,032	101	307	780	3,220	1,871
Nevada	17	38	11	18	84	0
New Hampshire	1	17	4	9	31	0
New Jersey	16	52	28	33	129	5
New Mexico	173	[illegible]	58	128	427	52
New York	406	308	248	191	1,153	52
North Carolina	236	279	266	328	1,109	55
North Dakota	698	271	551	173	1,693	845
Ohio	517	221	242	279	1,259	326
Oklahoma	1,076	127	523	303	2,029	85
Oregon	343	115	116	133	707	110
Pennsylvania	294	302	129	260	985	22
Rhode Island	1	6	2	3	12	0
South Carolina	63	59	210	87	419	17
South Dakota	[illegible]	93	546	223	1,755	559
Tennessee	234	181	319	172	906	74
Texas	2,513	809	1,019	905	5,246	514
Utah	109	115	37	60	321	10
Vermont	[illegible]	52	20	33	133	0
Virginia	184	212	168	154	718	17
Washington	801	47	128	224	1,200	267
West Virginia	23	30	25	27	105	2
Wisconsin	891	591	492	366	2,340	351
Wyoming	201	43	55	73	372	12
US Total	28,309	8,766	12,899	11,760	61,734	14,695

Note: Totals may not add due to rounding.

Farm debt movements in 1989 will reflect the pace at which the Agricultural Credit Act of 1987 is implemented. Another major influence will be the rate at which FmHA can work through its problem loan portfolios. The rate of reduction in farm debt levels is anticipated to slow from 1988's 3-percent decline. Overall debt levels should be virtually unchanged in 1989 as other lenders respond to the improving agricultural sector.

Real estate debt outstanding decreased by 5.4 percent in 1988, and is predicted to remain unchanged in 1989. Nonreal estate debt declined to $62 billion, down less than 1 percent, in 1988, and is predicted to remain in the $60 to $64 billion range at the end of 1989.

Equity Rising

Farm equity is expected to be up 5 to 7 percent in 1989 to over $643 billion, marking the third year of increase following a 35-percent decline from the peak in 1980 to 1986. Real farm equity (measured in 1982 dollars) rose 4 percent in 1988 and is forecast to rise 1 to 3 percent in 1989.

Farm equity growth is rising because asset values are increasing and debt levels are decreasing. This strengthening of farm sector health is essential for long-term financial recovery. These recent gains in farm sector net worth recover only a fraction of the $293-billion equity loss experienced between the 1980 peak and the 1986 bottom. These recent equity gains reflect improved expectations of longer term profitability of the farm sector.

Table 17--Farm balance sheet components (excluding households), by State, December 31, 1988

State	Assets			Liabilities			Proprietors' equity	Debt-to-asset ratio
	Real estate	Nonreal estate	Total	Real estate	Nonreal estate	Total		
	Million dollars							Ratio
Alabama	6,971	2,548	9,519	777	683	1,460	8,059	15.3
Alaska	150	258	408	19	10	29	379	7.2
Arizona	7,420	1,167	8,587	645	919	1,564	7,023	18.2
Arkansas	9,684	3,553	13,237	1,538	1,282	2,820	10,417	21.3
California	42,304	9,520	51,824	6,928	5,362	12,290	39,534	23.7
Colorado	11,596	4,374	15,970	1,645	1,364	3,009	12,961	18.8
Connecticut	1,902	275	2,177	101	103	204	1,973	9.4
Delaware	1,214	243	1,457	143	120	263	1,194	18.1
Florida	18,369	3,154	21,523	2,501	978	3,479	18,044	16.2
Georgia	11,099	3,715	14,814	1,674	1,384	3,058	11,757	20.6
Hawaii	3,180	312	3,492	229	96	325	3,167	9.3
Idaho	7,880	3,236	11,116	1,323	1,027	2,350	8,766	21.1
Illinois	33,648	9,885	43,533	4,502	2,764	7,266	36,267	16.7
Indiana	16,170	6,405	22,575	3,030	1,624	4,654	17,921	20.6
Iowa	33,231	13,705	46,936	5,633	3,815	9,448	37,488	20.1
Kansas	17,678	8,944	26,622	2,529	2,809	5,338	21,284	20.1
Kentucky	10,239	4,772	15,011	1,617	963	2,580	12,431	17.2
Louisiana	6,034	2,298	8,332	912	1,141	2,053	6,280	24.6
Maine	1,587	458	2,045	111	219	330	1,715	16.1
Maryland	4,634	1,213	5,847	508	316	824	5,023	14.1
Massachusetts	1,968	378	2,346	70	135	205	2,141	8.7
Michigan	8,398	4,179	12,577	1,568	1,212	2,780	9,797	22.1
Minnesota	16,820	10,983	27,803	3,753	2,925	6,678	21,125	24.0
Mississippi	8,318	3,054	11,372	1,382	1,383	2,765	8,607	24.3
Missouri	16,872	7,867	24,739	2,693	1,806	4,499	20,240	18.2
Montana	9,683	3,908	13,591	1,691	935	2,626	10,965	19.3
Nebraska	19,025	9,769	28,794	2,972	3,220	6,192	22,602	21.5
Nevada	1,662	506	2,168	196	84	280	1,888	12.9
New Hampshire	911	155	1,066	31	31	62	1,004	5.8
New Jersey	5,352	526	5,878	213	129	342	5,536	5.8
New Mexico	5,904	1,586	7,490	605	427	1,032	6,458	13.8
New York	7,503	3,669	11,172	873	1,153	2,026	9,146	18.1
North Carolina	10,226	3,371	13,597	1,455	1,109	2,564	11,033	18.9
North Dakota	11,668	5,722	17,390	1,736	1,693	3,429	13,961	19.7
Ohio	14,994	6,484	21,478	1,981	1,259	3,240	18,238	15.1
Oklahoma	13,976	5,759	19,735	1,914	2,029	3,943	15,792	20.0
Oregon	7,438	2,823	10,261	1,684	707	2,391	7,870	23.3
Pennsylvania	15,897	4,206	20,103	1,197	985	2,182	17,921	10.9
Rhode Island	422	37	459	15	12	27	432	5.9
South Carolina	4,541	1,646	6,187	588	419	1,007	5,180	16.3
South Dakota	8,554	5,833	14,387	1,410	1,755	3,165	11,222	22.0
Tennessee	11,999	4,039	16,038	1,040	906	1,946	14,092	12.1
Texas	55,105	16,756	71,861	4,846	5,246	10,092	61,769	14.0
Utah	4,424	1,124	5,548	423	321	744	4,804	13.4
Vermont	1,871	626	2,497	168	133	301	2,196	12.1
Virginia	10,326	2,723	13,049	1,064	718	1,782	11,267	13.7
Washington	10,517	3,415	13,932	1,509	1,200	2,709	11,223	19.4
West Virginia	1,794	691	2,485	292	105	397	2,088	16.0
Wisconsin	10,358	8,892	19,250	2,578	2,340	4,918	14,332	25.5
Wyoming	4,503	1,691	6,194	378	372	750	5,444	12.1
US Total	546,022	202,455	748,477	76,697	61,734	138,431	610,046	18.5

Note: Totals may not add due to rounding.

Financial Ratios And Returns

U.S. farm sector liquidity, solvency, profitability, and financial efficiency ratios (appendix table 8) express financial relationships between the income and balance sheet statements. They provide a relative basis for comparing and monitoring the financial strength of the farm sector over time. The financial ratios indicate that the financial position of the sector is improving relative to the early 1980's.

Farm Sector Returns and Cash Flow

Rising farm sector asset values, returns to assets, and cash flow have enhanced farmers' financial positions and have raised returns to farm assets and equity. Since 1988 returns to farm assets rose slower than farm real estate values, the

Table 18--Rates of return on farm assets and equity 1/

Year	Returns to assets			Returns to equity		
	Income	Real capital gains	Total	Income	Real capital gains	Total
	Percent					
1981-83	1.5	-6.0	-4.5	-.7	-6.1	-6.8
1984-86	3.5	-11.8	-8.3	1.6	-14.4	-12.7
1987	5.4	0.0	5.4	4.2	1.2	5.4
1988	4.9	2.8	7.6	3.5	4.4	8.0
1989F	5 to 6	0 to 1	6 to 7	4 to 5	1 to 2	6 to 7

F = Forecast. 1/ Excludes operator households. Totals may not add due to rounding. Returns to assets and equity are calculated using the average of the current and previous year's assets and equity, respectively.

rate of return on farm assets from current income fell from 5.4 percent to 4.9 percent. The rate of return on assets may rise to nearly 6 percent in 1989. The rate of return on equity from current income dropped from 4.2 to 3.5 percent in 1988 but may rise to nearly 5 percent in 1989 (figure 7 and table 18).

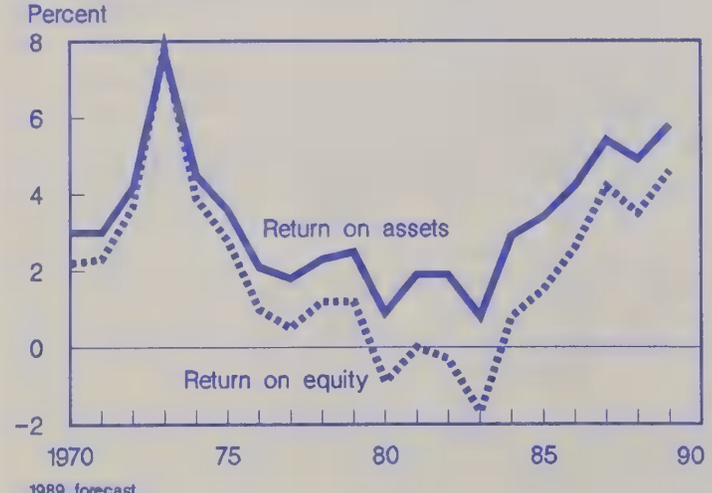
Rising residual income to farm assets and rising farm asset values led to real capital gains in 1988. The projected total real rate of return on assets, which includes both returns from current income and returns from real capital gains, rose from 5.4 percent in 1987 to about 7.6 percent in 1988. This reflects modest increases in both land prices and in returns to farm assets. The total rate of return on assets is expected to be between 6 and 7 percent in 1989.

Returns to operators and residual income to farm assets and to equity in 1989 are expected to rise from 1988 levels ($1982) as a $4-billion increase in cash receipts and a nearly $10-billion increase in the value of net change in inventories offset a nearly $6-billion increase in gross nonfactor and factor payments (table 19).

The total-real-rates-of-return measures of profitability and the "spread" include the real capital gains component of total returns. The spread is the total real return on assets minus the real cost of debt. As the total real return on assets has been rising faster than the real cost of debt, the spread has been rising from negative values since 1984. It rose from -11.8 percent in 1986 to -0.1 percent in 1987. The spread is expected to be 1.4 percent in 1988 and -0.3 percent in 1989. This rise in the spread from the large negative values in the mid-1980's suggests that debt financing is less unprofitable for the farm sector (figure 8).

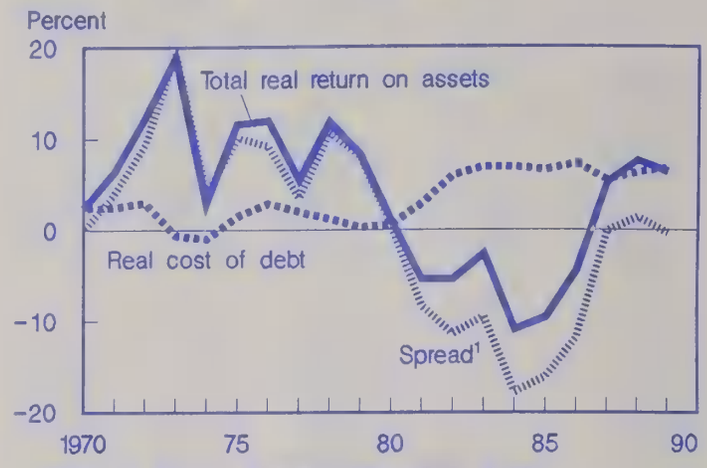
Cash flow after interest ($1982) was nearly $44 billion in 1988 and is expected to be about $39 to $43 billion in 1989,

Figure 7
Profitability Ratios: Return on Assets and Equity



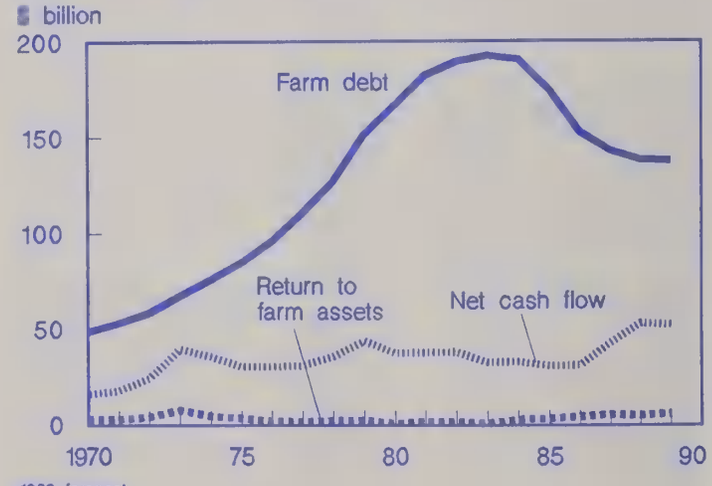
1989 forecast.

Figure 8
Rate of Return on Assets and Cost of Debt, Including Real Capital Gains



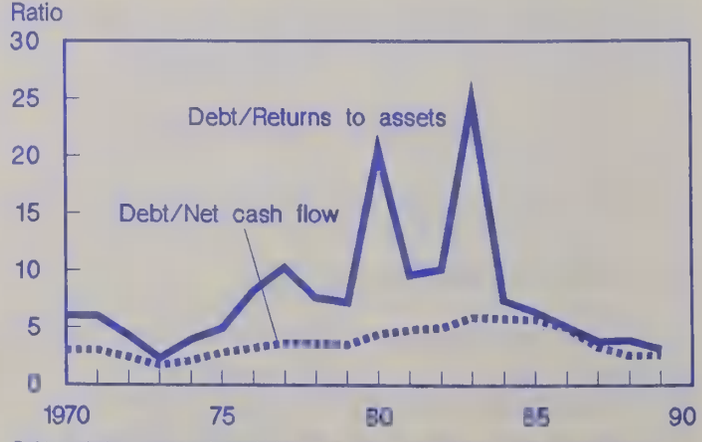
1/ Equals total real return on assets less the real cost of debt.
1989 forecast.

Figure 9
Farm Debt Compared with Income Flows to Farm Assets



1989 forecast.

Figure 10
Farm Debt Compared with Returns to Assets and Net Cash Flow



Debt excludes operator households. Net cash flow equals gross cash income minus total operating expenses.
1989 forecast.

Table 19--Returns to assets and equity

Income and Returns	1981	1982	1983	1984	1985	1986	1987	1988	1989F
	Billion 1982 dollars								
Gross farm income	164	151	136	151	140	132	138	138	141 to 145
Returns to operators	22	17	7	25	25	30	37	34	37 to 41
Residual income to farm assets	20	19	6	24	25	27	32	29	33 to 37
Residual income to equity	0	-2	-12	5	9	13	20	17	21 to 25

F = Forecast.

Table 20--Flow of funds to the farm sector, 1981-1989F

Income and Returns	1981	1982	1983	1984	1985	1986	1987	1988	1989F
	Billion 1982 dollars								
Gross cash income	155	151	145	144	141	134	138	141	136 to 140
Plus: Change in loans outstanding	16	7	3	-2	-14	-18	-10	-4	-1 to 1
Plus: Net rent to nonoperator landlords	7	6	5	6	7	6	6	6	5 to 7
Plus: Net change in farmers' currency and demand deposits	*	*	*	*	1	1	*	*	0 to 1
Minus: Gross cash expenses (excluding interest)	100	92	89	89	83	74	76	80	80 to 84
Minus: Capital expenditures	18	13	12	12	8	7	8	8	8 to 10
Equals: Cash flow before interest payments	61	59	51	50	44	42	49	56	51 to 55
Minus: Interest payments	20	21	20	19	16	14	13	12	11 to 13
Equals: Cash flow after interest payments	40	38	31	31	28	27	36	44	39 to 43

F = Forecast. * = less than þ $.5 billion. Numbers may not add due to rounding.

as the change in loans outstanding compared to 1988 offsets a small drop in gross cash income. This compares favorably with the 1984-86 average of $29 billion. Growth in real cash flow after interest to levels earned in the 1970-71 pre-boom period primarily reflects lower interest expenses (table 20).

Debt-to-net-cash-flow and debt-to-returns-to-farm-assets ratios in 1988 and 1989 are also expected to remain near 1970-71 pre-boom levels (figures 9 and 10). The debt-to-returns-to-farm-assets ratio is expected to fall from 3.9 in 1988 to 3.1 in 1989, but the debt-to-net-cash-flow ratio is expected to remain at 2.6. This also suggests that farmers are in a stronger financial position than at any time in the last several years.

General Economy

The outlook for the general economy over the next 6 months is for modest growth, slightly falling interest rates, and moderate inflation. This scenario follows on the heels of 6 months of slowing industrial production, sagging housing starts, and flat retail sales, largely generated by interest rate increases beginning in the spring of 1988. Strong consumer and producer price inflation during the first quarter of the year contributed to interest rate pressure.

But pressure to keep the interest rate high has diminished because earlier Federal Reserve (Fed) concerns of rising inflation have abated. The annualized inflation rate between January and July 1989 was 4.8 percent for producers. This compares with the annual adjusted inflation rate of 10.2 for 1989 estimated in March.

The Federal funds rate jumped from 6.83 to 8.74 percent in 1988, compared to an increase from 9.12 to 9.81 percent between January and May 1989. Consequently, the prime interest rate, which rose from 8.75 to 10.5 percent in 1988, climbed to 11.5 percent by March 1989, its highest level since November 1984.

The hike in interest rates was aimed at slowing the economy and curbing the threat of high inflation. All sectors responded to the stimulus. Industrial production, which had been rolling along in 1988 with a 5.7-percent increase, slowed in the first 6 months of 1989 to an annually adjusted growth rate of 1.1 percent. Housing starts fell from 1,678,000 in January 1989 to 1,419,000 in June. A first quarter 1989 GNP growth of 3.7 percent sank to 1.7 percent in the second quarter.

With inflation slowing in the second quarter, the Fed began to push down the federal funds rate to avoid the possibility

of a recession in the third and fourth quarters. The primary force behind the second quarter GNP growth was exports; second quarter export increases composed 89 percent of second quarter GNP growth whereas first quarter export increases composed only 49 percent of first quarter GNP growth.

The Federal funds rate fell significantly during the summer months. Between May and August 1989, rates fell from 9.81 to 8.95 percent. Following the lead, New York banks dropped the prime rate twice within a 5-week period, 11.5 to 10.5 percent.

Housing starts have reacted positively to the lower interest rates. Retail sales growth, which had been wavering during the first quarter, showed signs of renewed activity. The Fed seems inclined to pursue policies to stimulate economic growth, so long as the inflation level remains stable.

Previous concerns of recession have tapered off. Continued employment growth and low levels of inventories relative to sales do not indicate a recession. The growth expected from lower interest rates, combined with higher exports levels, should promote continued expansion.

The Changing Importance Of Agriculture To The Rural Economy

Alex Majchrowicz [1/]

Abstract: Agriculture continues to be an integral part of the nonmetropolitan economy, especially in the Midwest and the more rural parts of the Nation, but its importance has diminished over the last two decades. In this report, employment and earnings data for 1969 to 1986 are used to measure the changing importance of agriculture. While the changes in agriculture are significant to the economic welfare of some rural areas, they may have little effect on rural areas that are less dependent on farming.

Keywords: Agricultural employment, earnings, nonmetro counties

The importance of agriculture is diminishing in much of rural America. In 1986, agriculture and related agricultural services, forestry, and fisheries accounted for only 10.3 percent of total nonmetro employment and 7.8 percent of nonmetro earnings, steadily falling from 15.4 percent and 12.8 percent, respectively, in 1969 (tables A-1 and A-2). When rural counties are classified by economic base, those that depend on manufacturing, retirement, or government account for more nonmetro employment and earnings than farm-dependent counties (figure A-1). Rural counties classified as manufacturing-dependent in 1979 now provide about three times as much employment and earnings as counties classified as farm-dependent as of the same date. The share of nonmetro employment and earnings in agricultural counties fell about 2 percentage points between 1969 and 1986, while the proportion in retirement counties rose about 4 percentage points.

The transformation of the agricultural industry explains much of agriculture's decline. The adoption of new production methods and purchase of new equipment, which continued during the favorable economic conditions of the early and mid-1970's, allowed fewer farms, and fewer farmers, to produce more goods. Consequently, the number of farms declined from 3 million in 1969 to 2.2 million by 1986, and

Data Sources and Definitions

Estimates of employment and earnings are based on county data released by the U.S Department of Commerce, Bureau of Economic Analysis (BEA). The BEA series measures jobs and earnings at the place of employment. Data are classified by the Economic Research Service according to metro and nonmetro status and, for nonmetro counties, by economic base. Comparisons between county types in this report are based on classifications of counties as of 1983 for metro/nonmetro status and 1979 for economic base. Because all counties were classified at a specific date and kept constant over time, the data do not reflect movement of counties from one group to another over time.

Table A-1--Agricultural earnings by region and type of county, 1969-86

Region and type of county	Percent of total area earnings				Percent of total agricultural earnings			
	1969	1979	1982	1986	1969	1979	1982	1986
United States	3.4	3.0	2.2	2.2	100.0	100.0	100.0	100.0
Metro	1.5	1.4	1.2	1.2	36.0	38.9	45.3	44.9
Greater core	.5	.5	.5	.5	5.6	6.4	8.7	9.1
Greater fringe	1.8	1.6	1.3	1.2	7.1	7.9	9.0	9.5
Medium	2.3	2.1	1.8	1.8	14.3	15.6	18.5	17.3
Lesser	3.8	3.2	2.3	2.5	8.9	9.0	9.2	9.0
Nonmetro	12.8	10.3	7.1	7.8	64.0	61.1	54.7	55.1
Urbanized adjacent	6.3	5.6	4.0	4.2	6.9	7.0	6.5	6.4
Urbanized nonadjacent	7.1	6.0	4.3	4.3	6.0	6.3	6.1	5.4
Less urbanized adjacent	14.2	11.4	7.7	8.1	16.9	16.0	14.0	13.7
Less urbanized nonadjacent	15.4	11.7	7.9	9.3	21.2	19.4	17.0	18.1
Totally rural adjacent	22.0	17.0	12.8	13.2	3.8	3.5	3.4	3.3
Totally rural nonadjacent	29.6	23.9	16.6	19.5	9.2	8.9	7.7	8.3
Northeast	1.1	1.0	.8	.8	8.8	7.5	8.8	8.9
Nonmetro	4.9	3.8	3.1	2.8	2.8	2.2	2.4	2.1
Metro	.8	.8	.7	.7	6.0	5.2	6.4	6.8
Midwest	4.5	4.1	2.5	3.1	38.7	37.5	29.0	33.6
Nonmetro	16.3	14.2	8.7	11.4	29.6	28.5	21.2	25.4
Metro	1.3	1.3	.9	.9	9.0	8.9	7.7	8.1
South	4.0	3.1	2.4	2.2	31.2	30.7	34.9	30.6
Nonmetro	11.4	8.6	6.6	6.1	21.7	20.5	21.3	17.9
Metro	1.6	1.3	1.2	1.2	9.5	10.2	13.5	12.7
West	4.0	3.5	2.8	2.7	21.4	24.4	27.3	26.9
Nonmetro	14.1	10.2	7.5	8.4	9.9	9.8	9.7	9.6
Metro	2.4	2.5	2.1	2.0	11.5	14.6	17.6	17.3

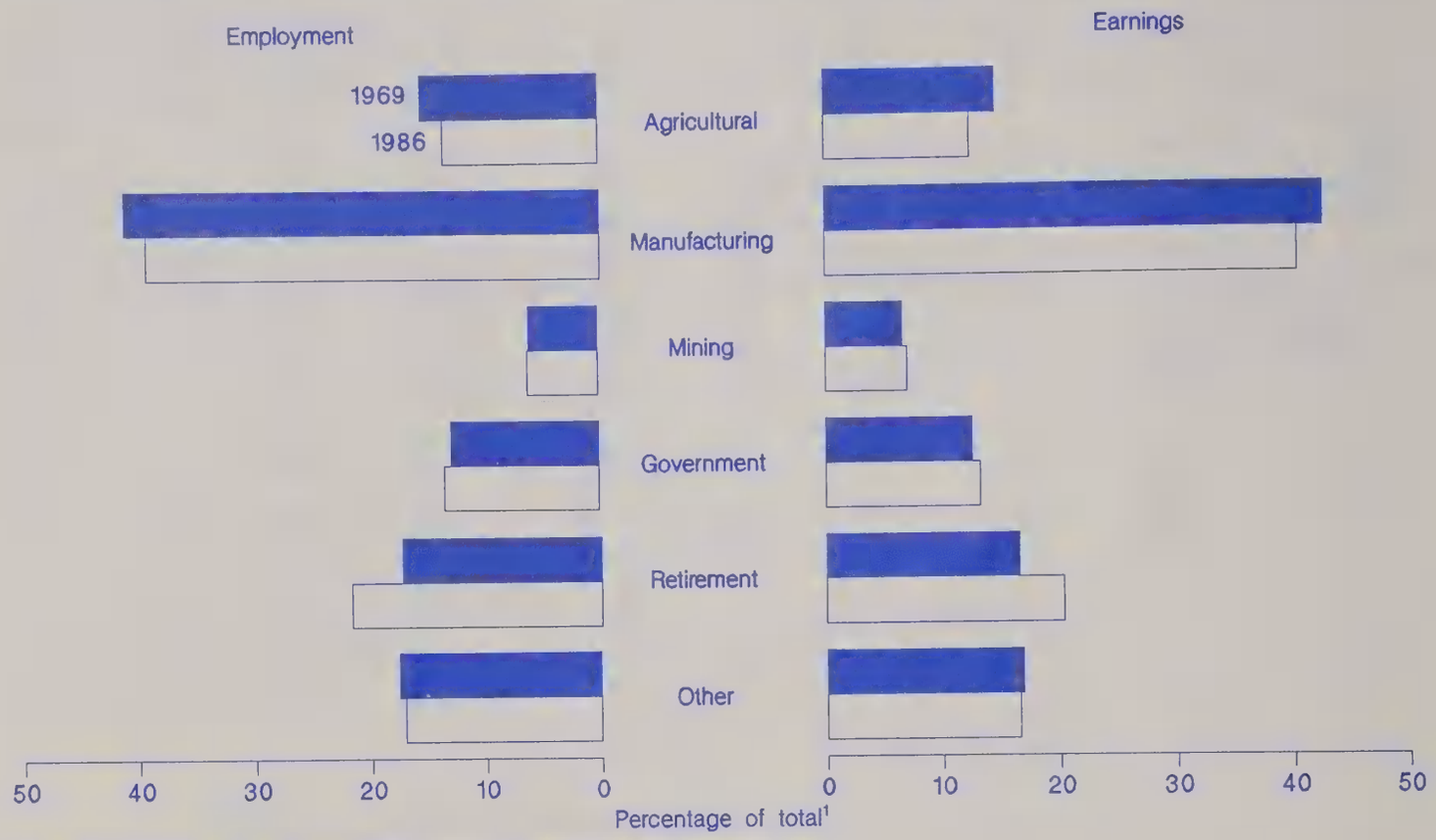
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table A-2--Agricultural employment by region and type of county, 1969-86

Region and type of county	Percent of total area employment				Percent of total agricultural employment			
	1969	1979	1982	1986	1969	1979	1982	1986
United States	5.0	4.2	4.0	3.6	100.0	100.0	100.0	100.0
Metro	2.2	2.1	2.1	1.9	34.2	38.8	40.3	42.9
Greater core	.6	.7	.8	.8	4.6	5.8	6.3	7.4
Greater fringe	2.7	2.4	2.3	2.1	7.0	8.2	8.6	9.5
Medium	3.2	2.9	2.9	2.6	13.8	15.6	16.0	16.6
Lesser	5.1	4.2	4.1	3.7	8.8	9.2	9.3	9.4
Nonmetro	15.4	12.1	11.6	10.3	65.8	61.2	59.7	57.1
Urbanized adjacent	7.9	6.8	6.6	5.9	6.7	6.8	6.7	6.6
Urbanized nonadjacent	8.9	6.6	6.2	5.7	6.1	5.6	5.4	5.2
Less urbanized adjacent	17.7	14.1	13.6	11.9	18.6	17.5	17.1	16.2
Less urbanized nonadjacent	17.3	13.3	12.8	11.5	21.0	19.1	18.7	17.8
Totally rural adjacent	26.5	20.6	19.9	17.5	4.2	3.9	3.9	3.7
Totally rural nonadjacent	30.5	24.2	23.1	20.7	9.1	8.3	8.1	7.6
Northeast	1.6	1.6	1.6	1.6	7.7	8.2	8.7	9.3
Nonmetro	6.2	5.6	5.8	5.1	2.8	2.8	2.9	2.9
Metro	1.1	1.2	1.2	1.2	4.9	5.4	5.8	6.4
Midwest	6.2	5.3	5.3	4.7	34.2	33.3	32.6	32.0
Nonmetro	17.5	14.6	14.3	12.9	25.9	24.6	23.8	22.8
Metro	2.0	1.9	2.0	1.8	8.3	8.8	8.8	9.2
South	6.8	5.0	4.6	3.9	41.3	38.3	37.9	36.6
Nonmetro	16.2	12.0	11.3	9.7	29.5	25.7	24.8	23.0
Metro	2.8	2.3	2.1	2.0	11.8	12.6	13.1	13.6
West	4.9	4.3	4.2	3.8	16.7	20.2	20.8	22.1
Nonmetro	14.5	11.1	10.7	10.1	7.6	8.1	8.2	8.4
Metro	3.2	3.1	3.0	2.8	9.1	12.1	12.6	13.7

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Figure A-1
Employment and Earnings by Type of Nonmetro County, 1969-86



1/ Percentages do not add to 100 because [illegible] counties are classified in [illegible] than one group.

the farm population fell more than 5 million persons to 5.2 million. 2/ Technological innovation also caused farms to become more industrialized, increasing their average size from 369 to 456 acres between 1969 and 1986. Because of these changes, small farms have continued to lose their competitiveness, decline in number, and, as a result, further reduce farm employment.

While agriculture prospered in the early 1970's from good economic conditions and increased output gained through new labor-saving technology, farming experienced substantial problems in the early 1980's. After the back-to-back recessions of 1980 and 1981-82, farmland values plummeted and asset values were reduced. Agricultural income declined as exports fell, caused in part by a high value of the dollar relative to foreign currencies and increased world food production.

Agriculture's Importance Declines in All Nonmetro Locations

The relative importance of agricultural employment and earnings has declined in all categories of nonmetro counties, both adjacent and nonadjacent to metro areas. As the farm sector lost jobs, other industries, especially service-producing ones, had gains. The largest shift in agriculture's importance occurred in totally rural counties, which historically have had the greatest dependence upon farming. Agriculture accounted for over one-half of the employment and earnings in totally rural counties in 1969, but fell to only about one-third by 1986.

In all regions except the metro Northeast, where farm employment increased fractionally, the importance of agriculture relative to the total area economy diminished between 1969 and 1986. The increase in the metro Northeast may be an anomaly caused by agricultural service workers. The agricultural services classification, while including farming-related services in soil preparation, crop production, and farm labor and management, also includes landscape and horticultural employment, popular services demanded in metro areas.

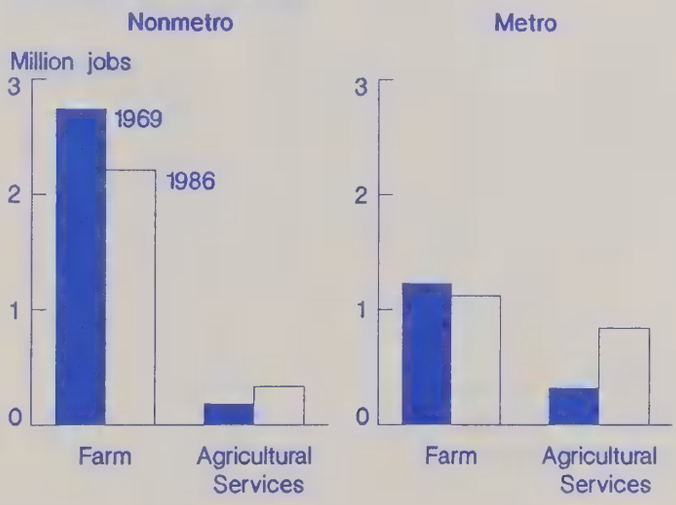
The nonmetro South and Midwest had the steepest declines in agricultural employment and earnings from 1969 to 1986. These areas were especially hard hit by the decrease in agricultural exports during the early 1980's because of their specialization in grains, cotton, and other export commodities. Not all regions had declines, however, as agriculture's share of total earnings in the nonmetro Midwest rose almost 3 percentage points during the 1982-86 economic recovery, reversing the downward trend since 1969. This improvement may be due in part to an increase in government payments, which nationally were $8.3 billion higher in 1986 than 1982.

Distribution of Agricultural Employment and Earnings Changes

Agricultural employment in the United States remained fairly constant at 4.5 to 4.7 million jobs during 1969-86 but the nonmetro share decreased from 65.8 to 57.1 percent. Agricultural earnings in nonmetro areas followed a similar pattern, declining from 64 percent to 55.1 percent. Again, agricultural service-employment plays a large part in explaining these changes. Nationally, farm employment declined from almost 4 million in 1969 to 3.3 million in 1986, with nonmetro areas accounting for over 0.5 million of the jobs lost (figure A-2). But during this period, agricultural service employment increased by 0.7 million, with little of the increase in nonmetro areas. These changes left total U.S. agricultural employment almost unchanged, but reduced the percentage of agricultural employment in nonmetro areas.

Between 1969 and 1986, agricultural employment and earnings, as a share of total agriculture, declined in all categories of nonmetro counties. The largest declines occurred in less-urbanized nonmetro counties, which most likely were affected by urban encroachment. In contrast to the nonmetro declines, the relative importance of agriculture increased in all categories of metro counties. As previously discussed, growth in agricultural service employment is the most probable explanation for the increases in metro counties.

Figure A-2
Change in Farm and Agricultural Services Employment, 1969-86



The distribution of agricultural employment and earnings also changed by region, declining in the Midwest and South but increasing in the Northeast and West. Most of the gains in the Northeast and West, however, were in metro areas. The Midwest was the only region where both the metro and nonmetro share of earnings declined, reflecting weak economic conditions in the most agriculturally oriented part of the country.

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Footnotes

[1/] Agricultural Economist, Agriculture and Rural Economy Division, ERS.

[2/] Over time, the Bureau of the Census has used varying definitions of a farm. Data shown here for farm numbers and farm population reflect the changes in definition and are based on the definition in use for each specific year.

List of Tables

Appendix Tables:

Appendix table 1--Farm income, assets and debt, and returns 1/

Item	1984	1985	1986	1987	1988	1989F
			Billion dollars			
Income and total returns						
1. Gross farm income 2/	163	156	151	163	168	180 to 184
2. Wages and perquisites to hired labor	9	9	9	10	10	9 to 10
3. Other operating expenses, excluding interest	80	76	70	73	[illegible]	83 to 87
4. Capital consumption	19	17	16	14	15	13 to 15
5. Net income from assets and operators'labor and management (1-2-3-4)	55	54	57	65	64	71 to 75
6. Income imputed to operators' labor and management	30	26	26	27	28	27 to 31
7. Residual income to assets (5-6)	26	27	31	38	35	42 to 46
8. Real capital gain to assets	-124	-104	-63	[illegible]	20	2 to [illegible]
9. Total return from assets (7+8)	-98	-76	-32	38	56	47 to 51
10. Interest paid	20	18	16	15	15	14 to 16
11. Real capital gain to debt	7	6	4	7	6	5 to 7
12. Total return to equity (9-10+11)	-111	-88	-44	30	47	38 to 42
13. Real capital gain to assets and debt (8+11)	-117	-98	-58	7	26	9 to 13
14. Residual income to equity (12-13)	5	9	14	23	21	27 to 31
Balance sheet 3/						
15. Assets	847	746	690	706	748	780 to 790
16. Debt	191	175	155	143	138	134 to 142
17. Equity (15-16)	656	571	534	563	610	643 to 653
			Percent			
Rates of return and interest rates						
18. Rate of return on assets (ROA) (7/15)	2.9	3.4	4.2	5.4	4.9	[illegible] to 6
19. Real capital gain on assets (8/15)	-13.8	-13.0	-8.7	.0	-2.8	[illegible] to 1
20. Total real return on assets (18+19)	-10.9	-9.6	-4.5	5.4	7.6	6 to 7
21. Av. interest rate paid on debt (10/16)	10.6	9.8	9.8	10.0	10.4	10 to 12
22. Real capital gains on debt (11/16)	3.7	3.2	2.5	4.5	4.1	3 to 5
23. Real cost of debt (21-22)	6.9	6.6	7.3	5.5	6.3	6 to [illegible]
24. Rate of return on equity (ROE) ((7-10)/17)	.8	1.5	2.6	4.2	3.5	4 to 5
25. Real capital gain on equity ((8+11)/17)	-16.6	-15.9	-10.6	1.2	4.4	1 to 2
26. Total real return on equity (24+25)	-15.8	-14.4	-8.0	5.4	8.0	6 to 7
27. Net return on assets (NROA) (18-21)	-7.7	-6.4	-5.6	-4.5	-5.5	-5 to -6
28. Spread (20-23) 4/	-17.8	-16.1	-11.8	-.1	1.4	[illegible] to -1

F = Forecast. 1/ Numbers may not add due to rounding. 2/ Excludes operator dwellings. 3/ Excludes operator households and CCC activity. 4/ When total real rate of return on assets exceeds total real cost of debt, debt financing is profitable.

Appendix table 2--Farm income and cash flow statement, 1984-89

Item	1984	1985	1986	1987	1988	1989F
	Billion dollars					
Farm income sources:						
1. Cash receipts	142.4	144.1	135.5	139.5	151	153 to 161
Crops 1/	69.5	74.3	64.0	63.8	73	75 to 79
Livestock	73.0	69.8	71.5	75.7	79	78 to 82
2. Direct Government payments	8.4	7.7	11.8	16.7	15	9 to 12
Cash Government payments	4.0	7.6	8.1	6.6	[illegible]	[illegible] to 10
Value of PIK commodities	4.5	.1	3.7	10.1	7	1 to 2
3. Farm-related income 2/	4.4	5.0	5.1	5.8	6	5 to 7
4. Gross cash income (1+2+3) 3/	155.2	156.9	152.5	162.0	172	170 to 175
5. Nonmoney income 4/	13.4	11.8	10.6	10.0	10	8 to 10
6. Realized gross income (4+5)	168.6	168.7	163.1	172.4	182	178 to 185
7. Value of inventory change	6.3	-2.4	-2.7	-.4	-4	4 to 7
8. Total gross income (6+7)	174.9	166.4	160.4	171.6	178	187 to 192
Production expenses:						
9. Cash expenses 5/ 6/	116.6	110.2	100.7	104.3	112	116 to 120
10. Total expenses	142.7	134.0	122.4	124.5	132	136 to 140
Income statement:						
11. Net cash income: 1/ 6/						
Nominal (4-9)	38.6	46.7	51.8	57.7	60	52 to 57
Deflated (1982$) 7/	35.9	42.0	45.2	49.7	49	40 to 45
12. Net farm income: 1/						
Nominal total net (8-10)	32.2	32.4	38.0	47.1	46	48 to 53
Deflated (1982$) 7/	30.0	29.1	33.1	39.9	38	39 to 43
13. Off-farm income	38.9	42.6	44.6	46.8	52	51 to 55
Other sources and uses of funds:						
14. Change in loans outstanding 6/	-1.9	-15.6	-19.9	-12.6	-5	0 to 3
Real estate	-1.1	-6.0	-9.2	-7.7	-4	0 to 3
Nonreal estate 8/	-.[illegible]	-9.6	-10.7	-4.9	1	0 to 2
15. Rental income and monetary change	8.9	8.8	7.8	6.8	[illegible]	7 to 9
16. Gross cash flow (11+14+15)	45.6	39.9	39.7	51.9	63	58 to 70
17. Capital expenditures 6/	12.5	9.2	8.5	9.8	10	10 to 12
18. Net cash flow (16-17) 1/ 6/	33.1	30.7	31.2	42.1	53	48 to 58

F = Forecast. Totals may not add due to rounding. 1/ Includes net CCC loans. 2/ Income from custom work, machine hire, farm recreational activities, forest product sales, and misc. sources. 3/ Numbers in parentheses indicate components required to calculate a given item. 4/ Value of home consumption of farm products and imputed rental value of farm dwellings. 5/ Excludes depreciation and hired labor perquisites. 6/ Excludes farm households. 7/ Deflated by the GNP implicit price deflator. 8/ Excludes CCC loans.

Appendix table 3--Relationship of net cash to net farm income

Item	1984	1985	1986	1987	1988	1989F
	Billion dollars					
Gross cash income	155.3	156.9	152.5	162.0	172	170 to 175
Minus: Cash expenses	116.6	110.2	100.7	104.3	112	116 to 120
Equals: Net cash income	38.6	46.7	51.8	57.7	60	52 to 57
Plus: Nonmoney income:						
Gross rental value of dwelling	12.3	10.9	9.7	9.1	10	8 to 10
Value of home consumption	1.1	.9	.9	.8	1	0 to 1
Value of inventory change	6.3	-2.4	-2.7	-.4	-4	4 to 7
Minus: Noncash expenses:						
Depreciation & capital consumption	23.1	20.8	18.9	17.4	17	16 to 18
Labor perquisites	.5	.5	.4	.5	1	0 to 1
Minus: Household expenses 1/	2.5	2.4	2.4	2.2	2.3	2 to 3
Equals: Net farm income	32.2	32.4	38.0	47.1	46	48 to 53

F = Forecast. Totals do not add due to rounding. 1/ Includes expenses related to operator dwelling.

Appendix table 4--Cash receipts, 1984-89

Item	1984	1985	1986	1987	1988	1989F
	Billion dollars					
Crop receipts: 1/						
Food grains	9.7	9.0	5.6	5.5	8	7 to 10
Wheat	8.6	7.9	4.9	5.0	6	6 to 9
Rice	1.1	1.0	.7	.5	1	1 to 2
Feed grains and hay	15.7	22.5	17.2	13.1	15	15 to 18
Corn	10.5	16.9	12.6	8.5	10	10 to 12
Sorghum, barley, and oats	2.9	3.3	2.4	2.1	2	1 to 3
Hay (all)	2.3	2.3	2.2	2.5	3	1 to 3
Oil crops	13.6	12.5	10.6	11.2	14	13 to 15
Soybeans	12.0	11.2	9.2	9.9	12	11 to 13
Peanuts	1.2	1.0	1.1	1.0	1	1 to 2
Cotton lint and seed	3.7	3.7	3.6	4.1	5	2 to 5
Tobacco	2.8	2.7	1.9	1.8	2	1 to 3
Fruits and nuts	6.7	6.8	7.2	8.3	9	7 to 10
Vegetables	9.1	8.6	8.7	9.4	10	9 to 11
Greenhouse & nursery	5.2	5.4	5.9	6.6	7	6 to 8
Other crops 1/	3.3	3.2	3.3	3.8	3	2 to 4
TOTAL CROPS	69.5	74.3	64.0	63.8	73	75 to 79
Livestock receipts:						
Red meats	40.8	38.6	39.1	44.3	46	45 to 49
Cattle	28.7	27.0	26.9	31.0	33	32 to 35
Calves	2.0	2.1	2.0	2.4	3	2 to 4
Hogs	9.7	9.0	9.7	10.3	9	9 to 11
Sheep and lambs	.5	.5	.5	.5	.5	0 to 1
Poultry and eggs	12.2	11.2	12.7	11.5	13	13 to 15
Broilers	6.0	5.7	6.8	6.2	7	6 to 9
Turkeys	1.7	1.8	2.0	1.7	2	1 to 3
Eggs	4.1	3.3	3.5	3.2	3	2 to 4
Other poultry	.5	.5	.4	.4	*	0 to 1
Dairy products	17.9	18.1	17.8	17.7	18	16 to 19
Wholesale milk 2/	17.7	17.8	17.5	17.5	17	16 to 19
Other livestock	2.0	1.9	1.9	2.2	2	1 to 3
TOTAL LIVESTOCK	73.0	69.8	71.5	75.7	79	78 to 82
TOTAL RECEIPTS	142.4	144.0	135.3	139.2	151	152 to 160
Program 3/	62.2	67.6	54.5	50.9	59	60 to 65
Non-program 4/	80.2	76.6	80.8	88.3	92	92 to 96

F = Forecast. * = Less than $500 million. Totals may not add due to rounding. 1/ Includes sugar, seed, and other misc. crops. 2/ Milk receipts do not reflect price deductions levied on marketings. 3/ Receipts from commodities directly supported by farm programs. 4/ Commodities not receiving direct support.

Appendix table 5--Farm income distribution by enterprise type 1/

Item	Crops					Livestock		
	Total crops	Cash grain 2/	Tobacco	Cotton	Fruit, nut, vegetables	Total livestock	Red meat	Dairy
	Thousands							
Number of farms								
1988	798	400	103	24	86	1,360	1,093	190
1989F	791	397	102	24	83	1,347	1,083	189
Income								
1. Cash receipts:	Million dollars							
Crops								
1988	65,720	29,970	2,140	4,290	16,330	6,840	5,340	1,000
1989F	70,400	32,600	2,600	4,500	16,700	7,400	5,700	1,100
Livestock								
1988	3,690	2,920	140	100	70	74,900	40,310	19,190
1989F	4,000	2,900	140	100	70	76,700	40,600	20,000
2. Direct Gov't payments:								
1988	9,480	7,500	100	900	110	5,020	3,730	1,100
1989F	7,100	5,600	80	700	80	3,700	2,800	800
3. Gross cash income: 3/								
1988	81,400	41,770	2,430	5,430	16,630	90,230	51,310	21,780
1989F	83,700	42,500	2,900	5,400	17,000	91,300	51,000	22,400
4. Cash expenses:								
1988	46,340	23,710	1,850	3,160	6,030	65,340	40,960	19,760
1989F	49,500	25,300	2,000	3,400	6,400	69,800	43,800	21,100
5. Net cash income:								
Current dollars 4/								
1988	35,060	18,060	580	2,280	10,600	24,880	10,340	2,020
1989F	34,200	17,200	900	2,000	10,500	21,500	7,300	1,300
Deflated (1982 $)								
1988	28,810	14,840	480	1,870	8,710	20,450	8,500	1,660
1989F	26,900	13,500	700	1,600	8,300	16,900	5,700	1,000
Balance Sheet								
6. Farm assets:								
Real estate								
1988	214,400	99,200	11,900	7,500	40,700	336,600	257,700	55,000
1989F	230,300	107,000	13,000	8,000	44,000	362,000	277,000	59,000
Nonreal estate								
1988	76,000	44,120	3,700	4,300	7,400	124,000	82,600	30,200
1989F	76,000	44,000	3,600	4,300	7,400	123,000	82,000	30,000
7. Total liabilities:								
1988	63,100	37,800	1,700	3,200	6,300	74,900	47,300	22,600
1989F	63,000	38,000	1,700	3,300	6,300	75,000	47,000	22,600
	Percent							
8. Debt-to-asset ratio:								
1988	22	26	11	27	13	16	14	26
1989F	21	25	10	26	12	15	13	25

F = Forecast. Numbers may not add due to rounding. 1/ Farm types are defined as those with 50 percent or more of all sales accounted for by a specific commodity or commodity group. 2/ Includes farms earning at least half their receipts from sales of wheat, corn, soybeans, rice, sorghum, barley, oats, or a mix of cash grains. 3/ Equals 1 + 2 + farm related income. 4/ Equals 3 - 4.

Appendix table 6--Farm production expenses, 1984-89

Item	1984	1985	1986	1987	1988	1989F
	Billion dollars					
Farm-origin inputs	32.8	30.3	28.9	31.8	37	36 to 40
Feed	19.9	18.0	16.2	16.9	21	20 to 24
Livestock	9.5	9.0	9.7	11.9	13	11 to 14
Seed	3.4	3.4	3.0	3.0	3	3 to 4
Manufactured inputs	21.5	21.0	17.0	17.0	18	18 to 22
Fertilizer	7.4	7.3	5.8	5.6	6	6 to 8
Fuels and oils	7.1	6.6	4.8	4.4	5	4 to 6
Electricity	2.2	2.2	1.9	2.4	3	2 to 3
Pesticides	4.8	5.0	4.5	4.6	5	5 to 6
Total interest charges	21.1	18.7	16.9	15.5	15	15 to 17
Short-term interest	10.4	8.8	7.8	7.3	7	7 to 9
Real estate interest	10.7	9.9	9.1	8.2	8	7 to 9
Other operating expenses	31.4	30.7	29.8	31.4	32	32 to 36
Repair and maintenance	6.4	6.4	6.4	6.6	7	7 to 8
Labor expenses	9.7	9.8	9.9	10.8	11	11 to 13
Machine hire & custom work	2.2	2.2	1.8	2.0	2	2 to 3
Animal health	1.3	1.2	1.2	1.2	1	1 to 2
Marketing, storage & transportation	4.0	4.1	3.7	3.8	3	4 to 5
Miscellaneous operating expenses	7.1	6.8	6.3	6.8	7	6 to 8
Other overhead expenses	35.8	33.2	29.8	28.8	29	28 to 31
Capital consumption	23.1	20.8	18.9	17.4	17	16 to 18
Taxes	4.1	4.2	4.1	4.4	4	4 to 5
Net rent to nonoperating landlords	8.6	8.2	6.7	7.1	8	7 to 9
TOTAL PRODUCTION EXPENSES	142.7	134.0	122.4	124.5	132	136 to 140
Cash expenses 1/	116.6	110.2	100.7	104.3	112	116 to 120

F = Forecast. 1/ Cash expenses equal total expenses minus depreciation, operator dwelling expenses, and noncash labor benefits.

Appendix table 7a--Balance sheet of the farming sector, excluding operator households, December 31

Item	1984	1985	1986	1987	1988	1989F
	Billion dollars					
Farm assets	846.7	746.4	689.5	706.3	748.5	780 to 790
Real estate 1/	637.7	555.9	507.3	518.5	546.0	580 to 590
Livestock and poultry	49.6	46.3	47.6	57.9	65.7	65 to 69
Machinery and motor vehicles	96.9	87.6	80.3	73.9	74.7	74 to 78
Crops stored 2/	29.7	23.5	19.1	20.9	26.2	18 to 22
Financial assets 3/	32.8	33.0	35.2	35.2	35.9	35 to 37
Farm debt	190.7	175.1	155.1	143.1	138.4	134 to 142
Real estate 4/	103.6	97.6	88.6	81.1	76.7	75 to 79
Nonreal estate	87.1	77.5	66.6	62.0	61.7	60 to 64
Total farm equity	656.0	571.3	534.4	563.2	610.0	643 to 653
	Percent					
Selected ratios:						
Debt-to-asset	22.5	23.5	22.5	20.3	18.5	17 to 18
Debt-to-equity	29.1	30.7	29.0	25.4	22.7	21 to 22
Debt-to-net cash income	492.8	375.0	299.5	248.0	231.1	245 to 251

F = Forecast. 1/ Excludes value of operator dwellings. 2/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 3/ Excludes time deposits and savings bonds. 4/ Includes CCC storage and drying loans.

Appendix table 7b--Balance sheet of the farming sector, including operator households, December 31

Item	1984	1985	1986	1987	1988	1989F
	Billion dollars					
Farm assets	947.7	842.6	787.1	809.8	860.7	900 to 910
Real estate	691.7	603.5	551.1	562.7	592.2	635 to 645
Livestock and poultry	49.6	46.3	47.6	57.9	65.7	65 to 69
Machinery and motor vehicles	102.7	92.4	84.4	78.6	79.3	79 to 83
Crops 1/	29.6	23.6	19.1	20.9	26.2	18 to 22
Household goods	26.1	27.8	30.5	32.9	38.8	39 to 43
Financial assets	47.9	49.0	54.5	56.7	58.5	57 to 61
Farm debt	204.3	187.9	166.6	153.7	148.5	144 to 152
Real estate 2/	112.3	105.7	95.9	87.7	83.0	81 to 85
Nonreal estate	92.0	82.2	70.8	66.0	65.6	63 to 67
Total farm equity	743.4	654.7	620.5	656.0	712.2	755 to 765
	Percent					
Selected ratios:						
Debt-to-asset	21.6	22.3	21.2	19.0	17.3	16 to 18
Debt-to-equity	27.5	28.7	26.8	23.4	20.9	19 to 20
Debt-to-net cash income	527.9	402.3	321.6	266.4	247.9	270 to 280

F = Forecast. 1/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 2/ Includes CCC storage and drying loans.

Appendix table 8--Farm financial ratios: liquidity, solvency, profitability, and financial efficiency

Farm financial ratios:	1981	1982	1983	1984	1985	1986	1987	1988	1989F
					Ratio				
Liquidity ratios:									
Household debt service coverage 1/	2.76	2.77	2.75	2.87	3.46	4.04	4.74	5.27	4.9 to 5.1
Farm business debt service coverage 2/	1.66	1.74	1.70	1.76	2.12	2.49	2.94	3.17	2.8 to 3.0
Debt servicing 3/	0.21	0.23	0.22	0.22	0.19	0.18	0.15	.14	0.1 to 0.2
Times interest earned ratio 4/	2.57	2.26	1.80	2.72	2.96	3.49	4.32	4.30	4.4 to 4.5
					Percent				
Solvency ratios:									
Debt/asset 5/	18.3	19.7	20.4	22.5	23.5	22.5	20.3	18.5	17 to 19
Debt/equity 6/	22.4	24.6	25.6	29.1	30.7	29.0	25.4	22.7	20 to 22
					Percent				
Profitability ratios:									
Return on equity 7/	0.0	-0.3	-1.7	0.8	1.5	2.6	4.2	3.5	4 to 5
Return on assets 8/	1.9	1.9	0.8	2.9	3.4	4.2	5.4	4.9	5 to 6
Net farm to gross cash farm income 9/	18.4	15.6	8.4	20.8	20.7	24.9	29.1	26.6	28 to 30
					Percent				
Financial efficiency ratios:									
Gross ratio 10/	77.6	74.9	75.5	75.1	70.2	66.0	64.4	65.1	61 to 63
Interest to gross cash farm income 11/	13.1	13.9	13.7	13.1	11.4	10.6	9.2	8.5	8 to 9
Asset turnover 12/	14.7	15.4	15.8	17.3	19.7	21.2	23.2	23.6	22 to 24
Net cash farm income to debt ratio 13/	29.7	31.6	30.1	30.8	35.3	41.2	48.7	52.9	50 to 52
					Ratio				
Financial leverage index 14/	0.00	-0.15	-2.06	0.27	0.45	0.61	0.77	0.73	0.7 to 0.9

F= Forecast. 1/ Assesses the ability of farm sector households to repay both principal and interest. 2/ Assesses the ability of farm businesses to repay both principal and interest. 3/ Indicates the proportion of gross cash farm income needed to service debt. 4/ Shows the farm sector's ability to service debt out of net income. 5/ Shows the proportion of all assets that are financed with debt. 6/ Measures the relative proportion of funds provided by creditors(debt) and owners(equity). 7/ Measures the ability of farm sector management to realize an adequate return on the capital invested by the owner(s). 8/ Measures how efficiently managers use farm assets. 9/ The profit margin indicates profits earned per dollar of gross income. 10/ Gives the portion of gross cash farm income absorbed by production expenses (claims on farm businesses). 11/ Gives the proportion of gross cash farm income committed to interest payments. 12/ Measures the gross farm income generated per dollar of farm business assets. 13/ Indicates the burden placed on net cash farm income to retire outstanding debt. 14/ Indicates whether or not the use of financial leverage is beneficial.

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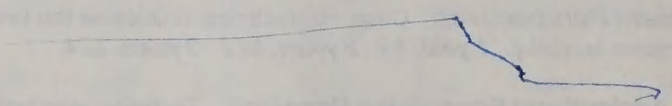

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